



## 1305 SURVEILLANCE:

STATE PUBLIC HEALTH ACTIONS TO PREVENT AND CONTROL DIABETES,  
HEART DISEASE, OBESITY AND ASSOCIATED RISK FACTORS AND  
PROMOTE SCHOOL HEALTH

## DATA PAGES

Division of Health Surveillance

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# Surveillance of Chronic Disease

## 1305 Grant Indicator



When this symbol is seen, there is a measure reportable to the CDC as part of the grant on the page.

## Healthy Vermonters 2020 (HV2020)



When this symbol is seen, a HV2020 measure is reported on that page.

## Chronic Disease Measure



When this symbol is seen, a recommended measure for the surveillance of chronic disease is on the page.

# Footnote Legend†

Whenever the symbols to the right are seen it carries with it the associated meaning.

- † Refer to footnote legend.
- ^ Data had been age-adjusted to the 2000 U.S. population except for data that is broken down by age.
- \* Statistically significant difference between compared groups.
- ~ Excludes those whose form of cancer is skin cancer.
- Due to BRFSS methodology changes, caution should be taken when comparing data from prior to 2011 and after.
- ◇ Data with contributing causes of mortality are only available starting in 2009.
- \*\* Value is too small to report.
- Data not available
- ‡ Rate is limited to those who currently smoke.
- ⌘ In 2009, the New Hampshire Department of Health and Human Services (DHHS), in partnership with the Department of Information Technology (DoIT), changed the process used to create their hospital discharge data set. This change may contribute to differences in New Hampshire data provided to Vermont and subsequently any Vermont VUHDDS data reported after 2009.
- § Data available only for grades 9-12; These questions were not asked of students grades 6-8.
- Δ All middle school students were not surveyed until 2011.
- α Healthy Vermonters 2020 target applies only to high school students.
- + 2007 & 2009 YRBS did not have questions for sugar-sweetened beverages, values are for soda only.

# State Public Health Actions 1305

# State Public Health Actions 1305

- State Public Health Actions 1305 is a grant funded by the CDC for states to work towards the prevention of select chronic diseases in a coordinated fashion.
- Chronic diseases and conditions are the major drivers of sickness, disability, and health care costs in the nation.
  - ▣ Risk factors for chronic disease can be addressed at two levels: the individual level (healthcare interventions) and population level (including policies and environments that promote health).
- Decreasing cardiovascular disease, diabetes, and obesity and increasing physical activity, nutrition, and promoting school health are the main goals of the Vermont 1305 program.
- CDC's Chronic Disease Prevention System is the recommended strategy for coordinated chronic disease prevention working in four key domains.

Source: Centers for Disease Control and Prevention, The Four Domains of Chronic Disease Prevention.

# The Four Domains of Chronic Disease Prevention

- Domain 1: Epidemiology and Surveillance/Evaluation
- Domain 2: Environmental Approaches
- Domain 3: Health Care System Interventions
- Domain 4: Community Programs Linked to Clinical Services
- Monitor disease/risk factor trends and tracks progress.
- Promote policy and physical/social environment changes to make healthy lifestyles easier.
- Improve delivery and use of clinical and preventive services across patient populations.
- Improve connections between clinical and community programs that support prevention and self-management of chronic conditions.

Source: Centers for Disease Control and Prevention, The Four Domains of Chronic Disease Prevention.



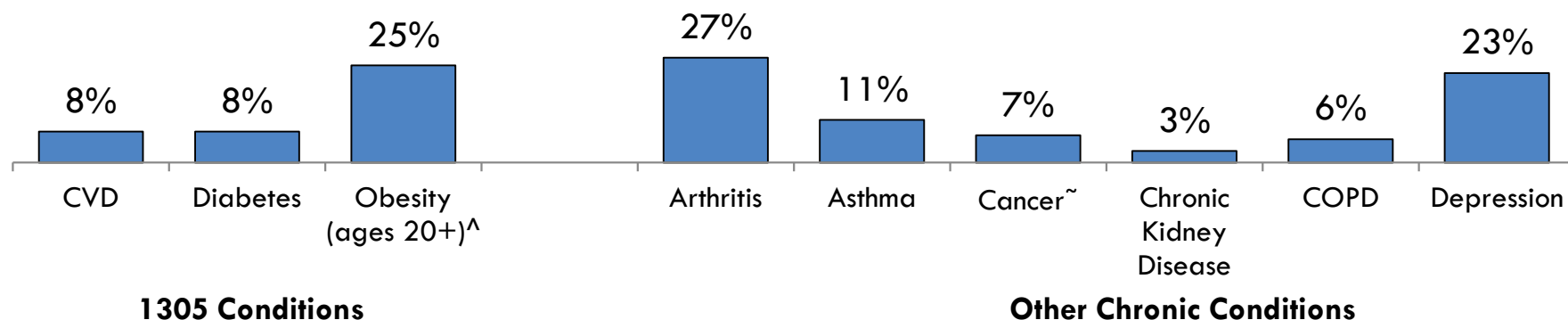
# Vermont Chronic Disease Overview



# Prevalence of Chronic Disease in Vermont

In 2015, over a quarter of Vermont adults had arthritis (27%), a quarter were obese (25%), and almost a quarter had a depressive disorder (23%). One in nine (11%) Vermont adults had asthma. Eight percent or less Vermont adults had: diabetes (8%), cardiovascular disease (8%), cancer (7%), chronic obstructive pulmonary disorder (6%), or chronic kidney disease (3%).

**Prevalence of Chronic Disease in Vermont, 2015<sup>†</sup>**

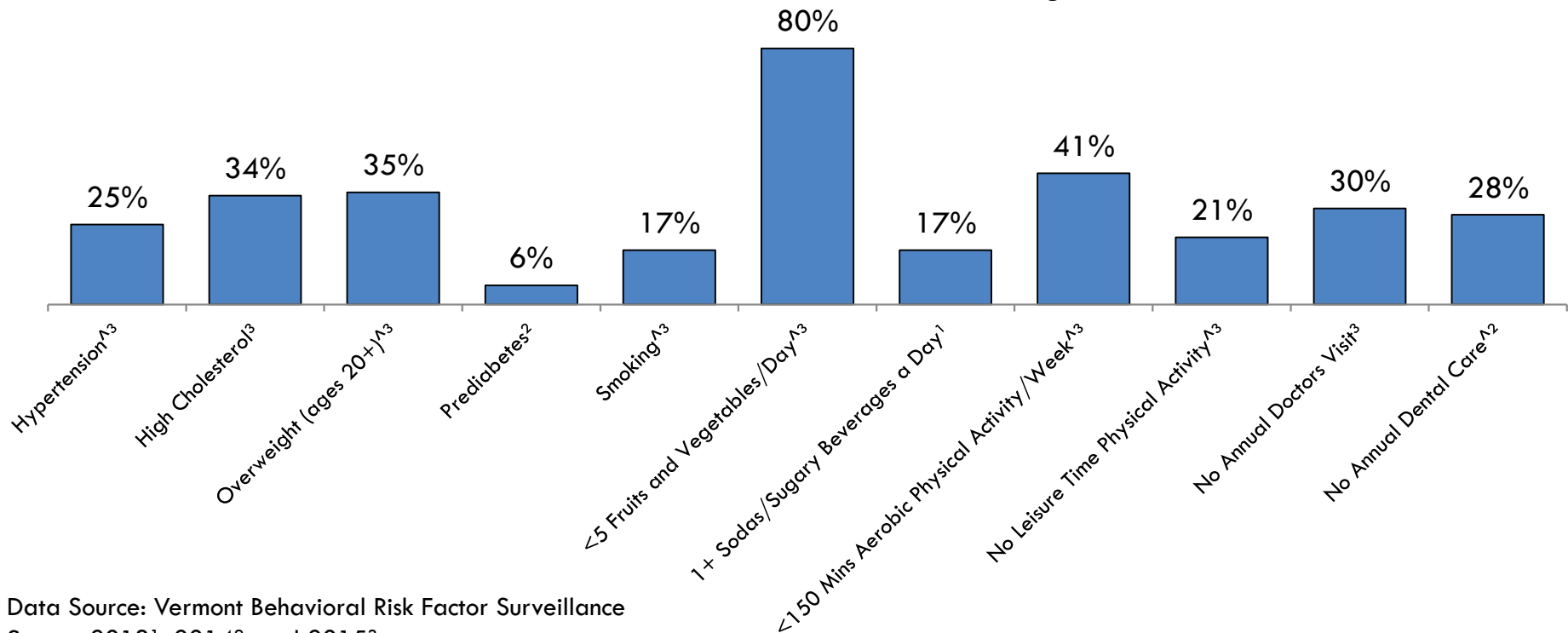


Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Adult Prevalence of Chronic Disease Risk Factors

Most chronic diseases are caused or made worse by one or more common risk factors. Eight in ten Vermont adults consumed less than five fruits or vegetables a day (80%). Half as many did not get the recommended amount of weekly physical activity (41%). Approximately a third of adult Vermonters were overweight (35%) or had high cholesterol (34%), a quarter had hypertension (25%). One in three adults did not seek annual medical care (30%) and over a quarter did not seek annual dental care (28%).

**Prevalence of Common Chronic Disease Risk Factors among Vermont Adults<sup>†</sup>**

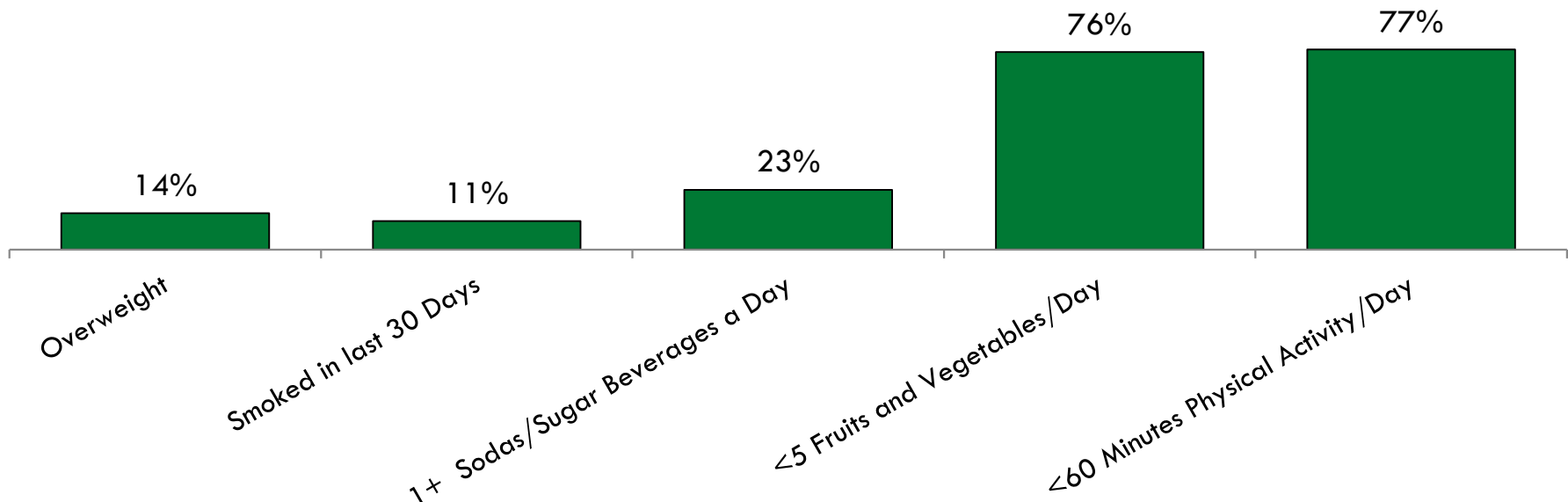


Data Source: Vermont Behavioral Risk Factor Surveillance System 2013<sup>1</sup>, 2014<sup>2</sup>, and 2015<sup>3</sup>.

# Youth (Grades 9-12) Prevalence of Chronic Disease Risk Factors

Several behaviors can lead to the eventual development of chronic diseases. Of these behaviors, over three quarters of youth (grades 9-12) did not meet daily physical activity recommendations (77%) or consumed fewer than 5 fruits or vegetables a day (76%). Almost a quarter of youth consumed one or more sodas/sugar-sweetened beverages a day (23%). Fourteen percent were overweight and 11% smoked cigarettes.

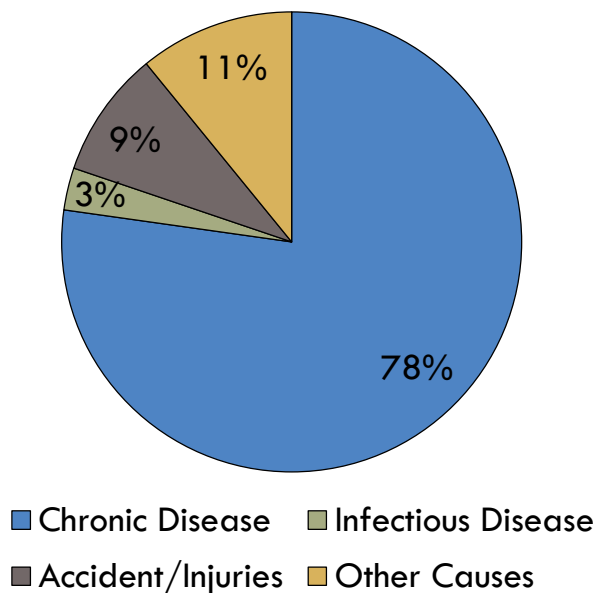
**Prevalence of Risk Factors among Vermont Youth (grades 9-12) that Could Lead To Chronic Disease, 2015**



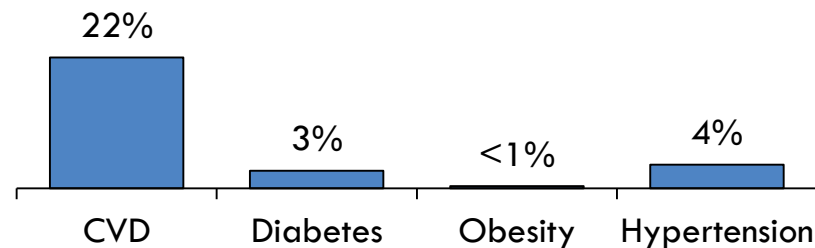
# Chronic Disease-Related Mortality

Chronic diseases were the most common cause of death in Vermont, accounting for almost eight in ten deaths (78%). Chronic diseases related to 1305 accounted for over a quarter of all deaths among Vermont residents (27%).

**Causes of Death, Vermont, 2014**



**Proportion of Deaths Related to 1305 Chronic Diseases among All Vermont Deaths, 2014**



Source: Vermont Vital Statistics 2014.



# Diabetes

# Diabetes

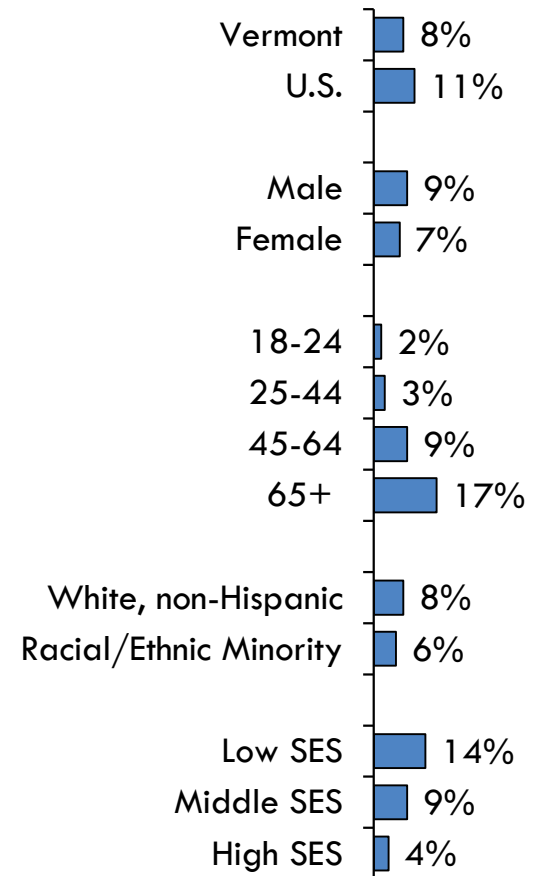
- Diabetes is a chronic disease in which the body does not make enough insulin or properly use the body's insulin.
  - ▣ With **Type 1** diabetes, the body is unable to produce insulin. **Type 2** diabetes is the most common form of diabetes, where the body does not use its insulin properly. Type 2, the more common type of diabetes, can usually be prevented through lifestyle changes.
- Symptoms may include: frequent urination, excessive thirst and appetite, fatigue, blurred vision, slow-healing wounds, weight loss (type 1), and numbness/tingling in hands/feet (type 2).
- Over time, build up of glucose in the blood can damage the eyes, kidneys, nerves, or heart leading to serious health complications.

Source: American Diabetes Association, Diabetes Basics, 2015.

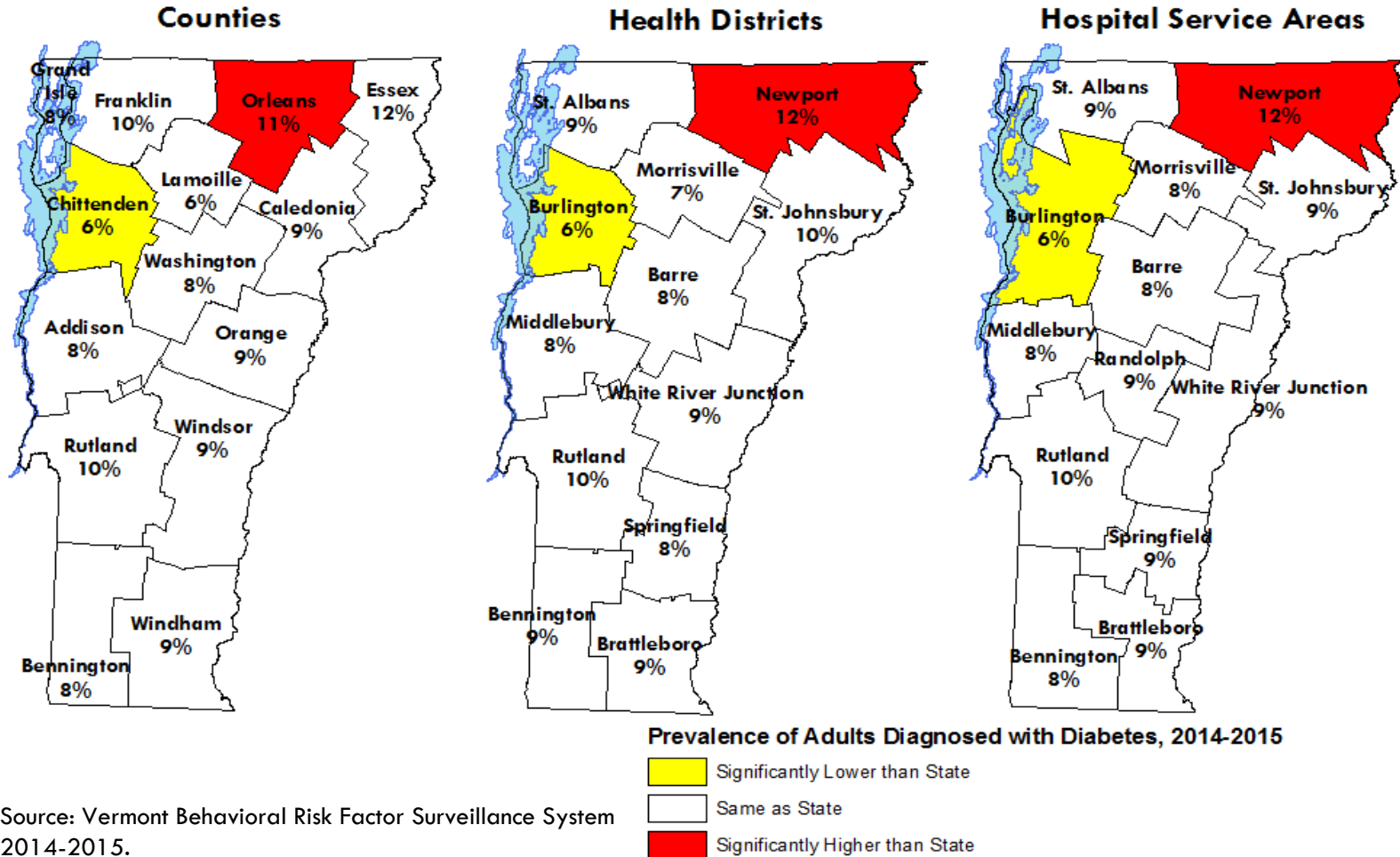
# Adult Vermonters with Diabetes

- About one in twelve (8%) Vermont adults had been diagnosed with diabetes in 2015 (or approximately 42,000 adults).
- ▣ Vermont adults were significantly less likely to have diabetes than U.S. adults overall.
- ▣ Diabetes prevalence increases significantly with advancing age.
- ▣ All differences by socioeconomic status were statistically significant.
  - Adults living at a high socioeconomic status were significantly least likely to have diabetes.

**Prevalence of Adults with Diabetes, 2015**



Source: Vermont Behavioral Risk Factor Surveillance System 2015.



Source: Vermont Behavioral Risk Factor Surveillance System  
2014-2015.

## Adult Prevalence of Diabetes by Subgeography

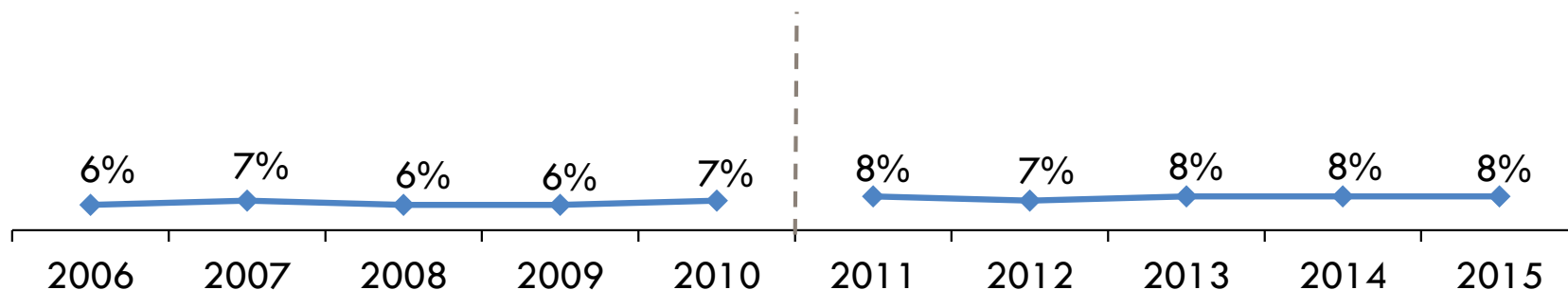
Regionally, northeastern Vermont (Orleans county and the Newport health district and hospital service area) had a significantly higher prevalence of adults diagnosed with diabetes when compared to the state average.



# Adult Prevalence of Diabetes<sup>†</sup>

The prevalence of diagnosed diabetes in Vermont has not changed significantly from 2006 through 2015.

## Prevalence of Adults with Diabetes<sup>†•</sup>

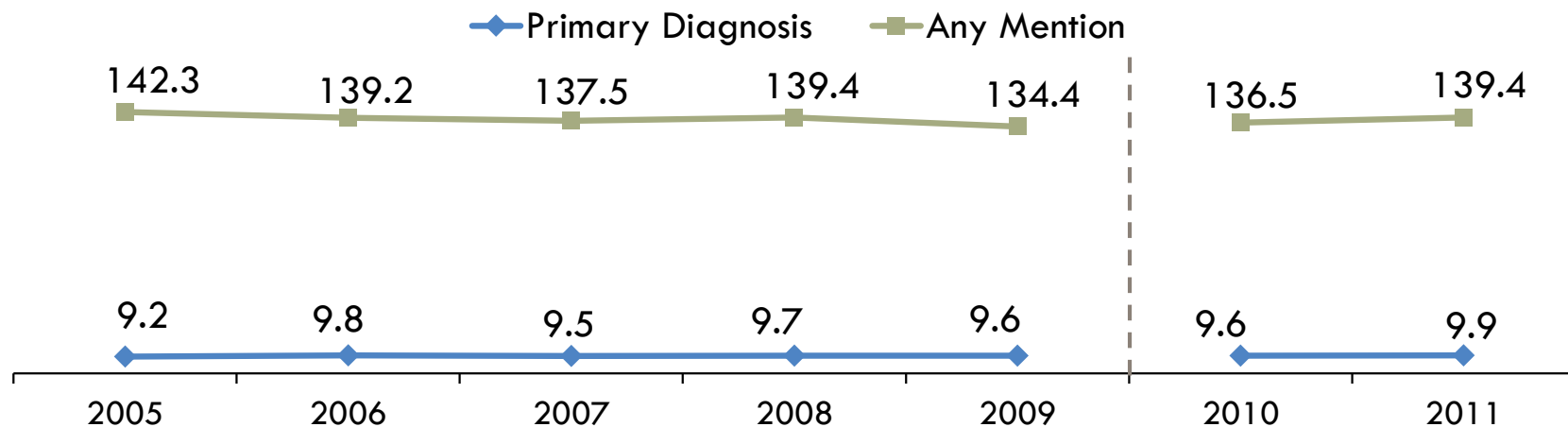


Source: Vermont Behavioral Risk Factor Surveillance System 2006-2015.

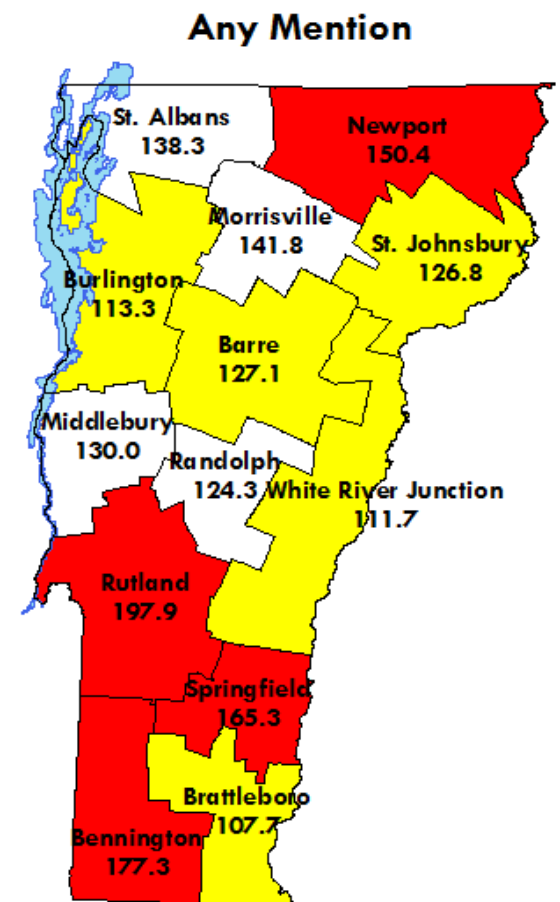
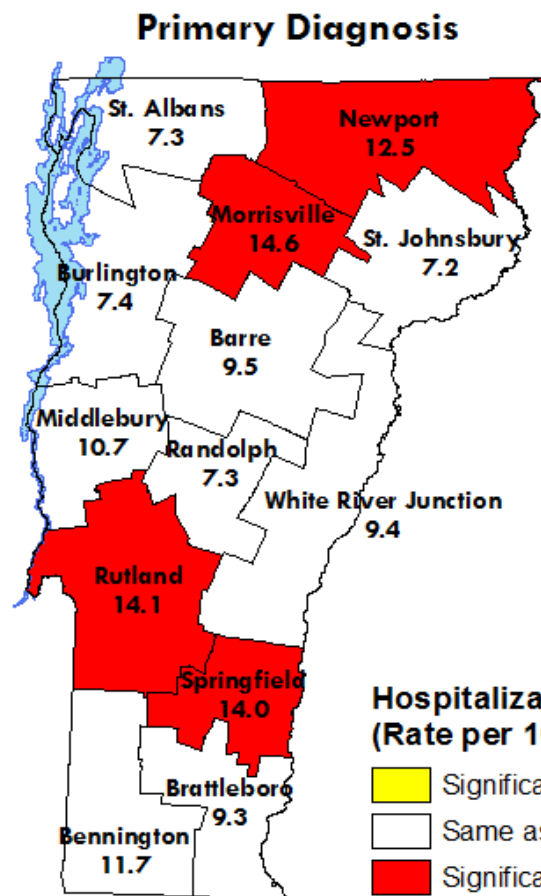
# Diabetes-Related Hospital Discharges<sup>†</sup>

In 2011, there were 9.9 hospital discharges with a primary diagnosis of diabetes for every 10,000 Vermonters (654 discharges). Any mention of diabetes as a factor for hospitalization occurred in 139.4 hospital discharges for every 10,000 Vermonters (10,387 discharges) indicating a substantial number of discharges with diabetes as a contributing factor. The rates of diabetes as a primary diagnosis or any mention of diabetes did not significantly change from 2010 to 2011.

**Hospital Discharge with a Diabetes Diagnosis (per 10,000 Vermonters)<sup>^a</sup>**



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2005-2011.



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2009-2011.<sup>1,2</sup>

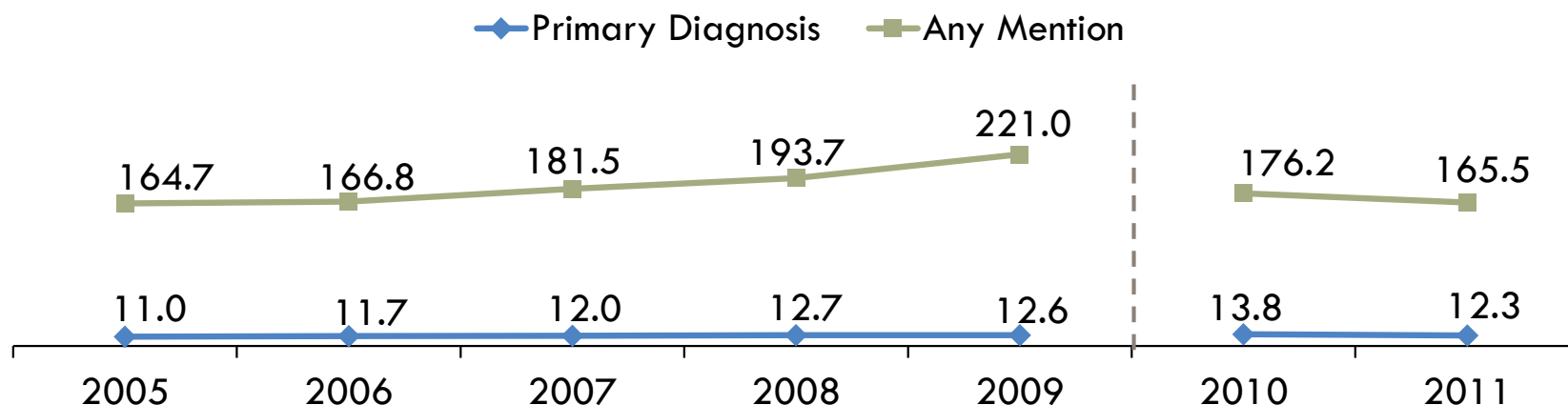
## Diabetes-Related Hospital Discharges by Hospital Service Area (HSA)<sup>†</sup>

Hospital discharges with a primary diagnosis of diabetes were significantly higher than the state average in the Newport, Morrisville, Rutland, and Springfield Hospital Service Areas (HSAs). Any mention of a diabetes diagnosis during hospitalization was significantly higher in Newport and the south of the state, except for the Brattleboro HSA.

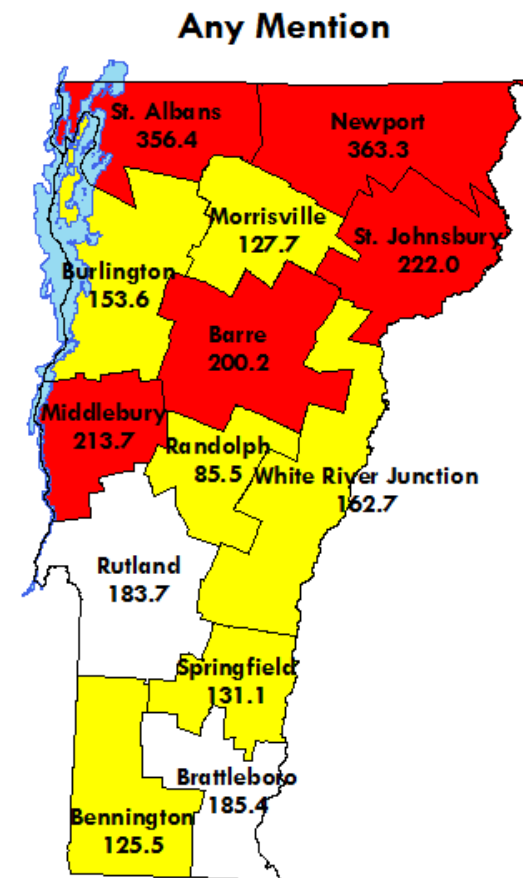
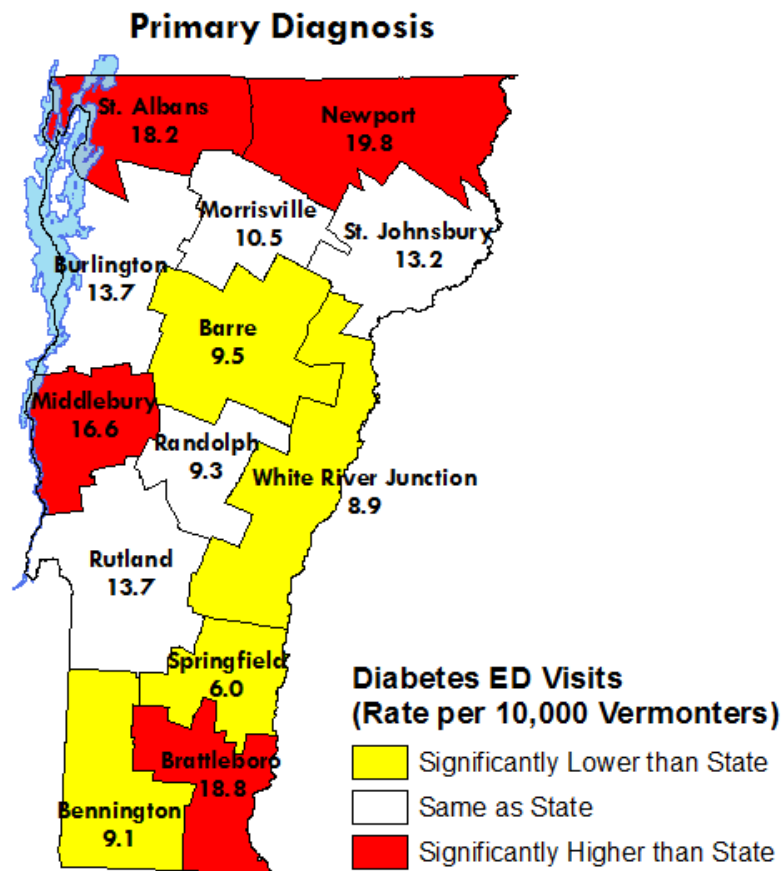
# Diabetes-Related Emergency Department Visits<sup>†</sup>

In 2011, there were 12.3 ED visits with a primary diagnosis of diabetes for every 10,000 Vermonters (840 ED visits). For every 10,000 Vermonters, 165.5 had any mention of diabetes during an ED visit (12,000 ED visits). As a primary diagnosis, diabetes-related ED visits have remained stable over time. Any mention of diabetes significantly decreased from 2010 to 2011.

**ED Visits with a Diabetes Diagnosis (rate per 10,000 Vermonters)<sup>^□</sup>**



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2005-2011.



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2009-2011.<sup>^a</sup>

## Diabetes-Related Emergency Department Visits by Hospital Service Area (HSA)<sup>†</sup>

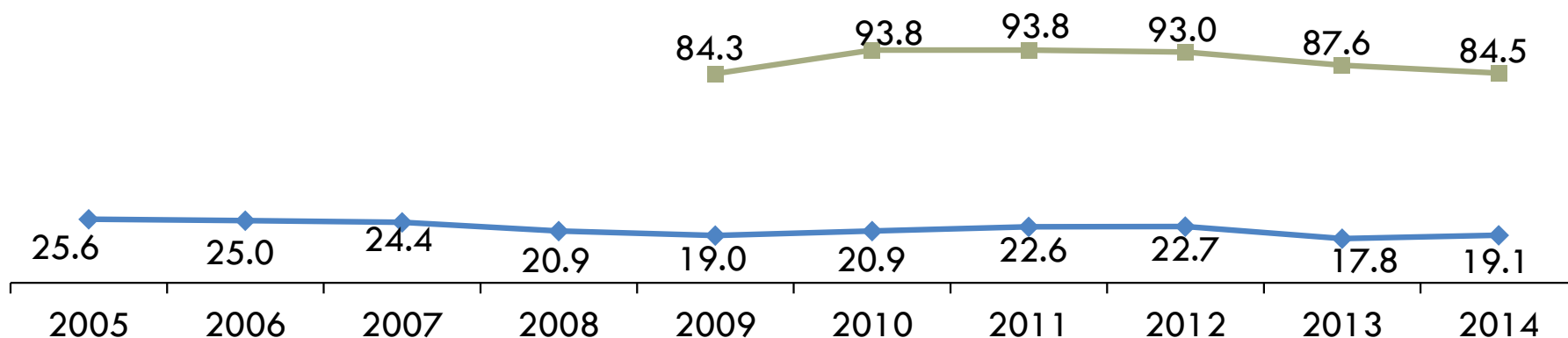
Northern Vermont and the Middlebury and Brattleboro HSAs were significantly higher than the state average for diabetes as a primary diagnosis for an ED visit. HSAs in northern Vermont as well as the Middlebury HSA remained higher than the state average for any mention of diabetes during an ED visit. The St. Johnsbury and Barre HSAs were also higher than the state average for any mention of a diabetes diagnosis.

# Diabetes-Related Mortality†

In 2014, diabetes was the primary cause in 19.1 deaths for every 100,000 Vermonters. The rate of diabetes as a primary cause of death significantly declined from 2005 to 2014. In 2014, all diabetes-related mortality rate for Vermont was 84.5 deaths per 100,000 Vermonters. All diabetes-related deaths have shown no statistically significant difference from 2009 to 2014 or 2013 to 2014. The difference in the rates of diabetes as a primary cause of death and all diabetes-related deaths indicate that diabetes as a contributing cause of death is potentially driving the all diabetes-related mortality.

## Diabetes-Related Mortality (Rate per 100,000 Vermonters)^

◆ Diabetes as a primary cause of death    ■ All diabetes-related deaths◇



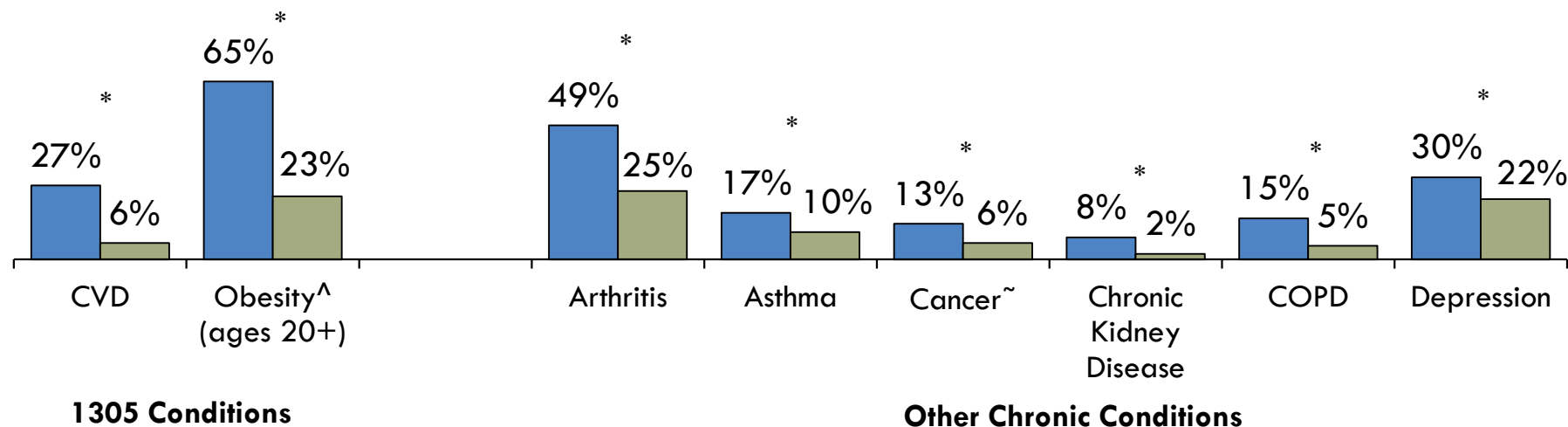
Source: Vermont Vital Statistics 2005-2014.

# Chronic Disease Comorbidities for Adults with Diabetes†

Over two-thirds of Vermont adults who had diabetes were also obese (65%) and over a quarter (27%) also had cardiovascular disease (CVD). About half of Vermont adults who had diabetes also had arthritis (49%) and three in ten had a depressive disorder (30%). Vermont adults with diabetes were significantly more likely to have all of the comorbidities below when compared to adults who did not have diabetes.

**Prevalence of Chronic Disease Comorbidities among Adults with Diabetes, 2015†**

■ Had Diabetes    ■ Did Not Have Diabetes

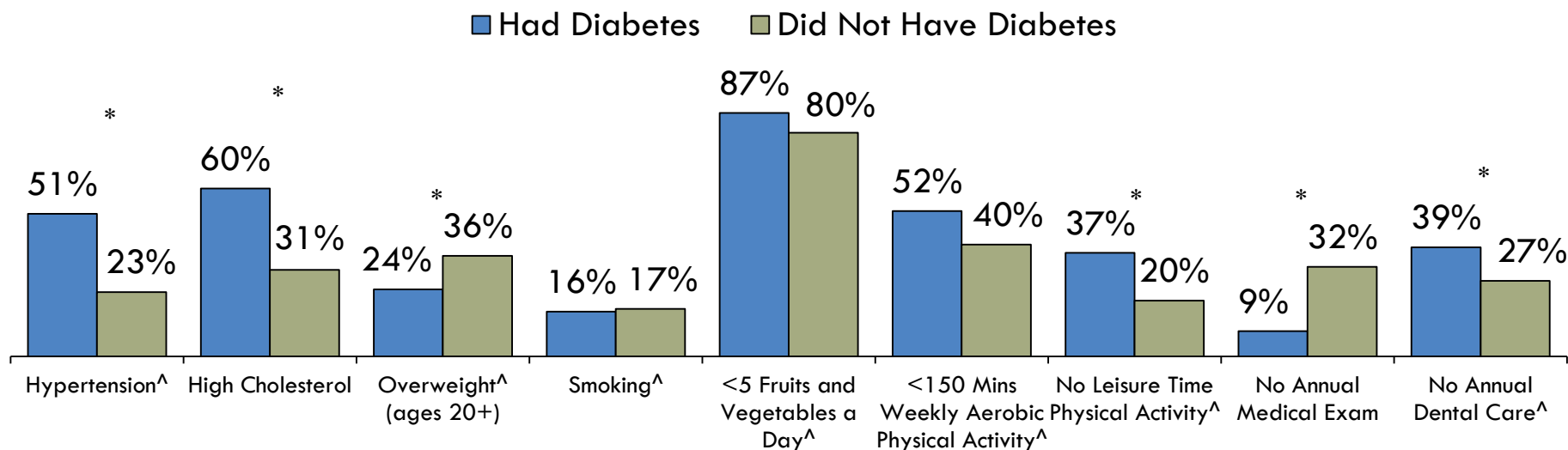


Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Chronic Disease Risk Factors among Adults with Diabetes<sup>†</sup>

Adults with diabetes were significantly more likely to have hypertension, high cholesterol, have no leisure time physical activity and not receive annual dental care when compared to adults who did not have diabetes. Adults who had diabetes were significantly less likely to be overweight (though they were significantly more likely to be obese – see page 23) or to not have an annual medical exam when compared to adults who did not have diabetes.

## Prevalence of Chronic Disease Risk Factors among Adults with Diabetes<sup>†</sup>



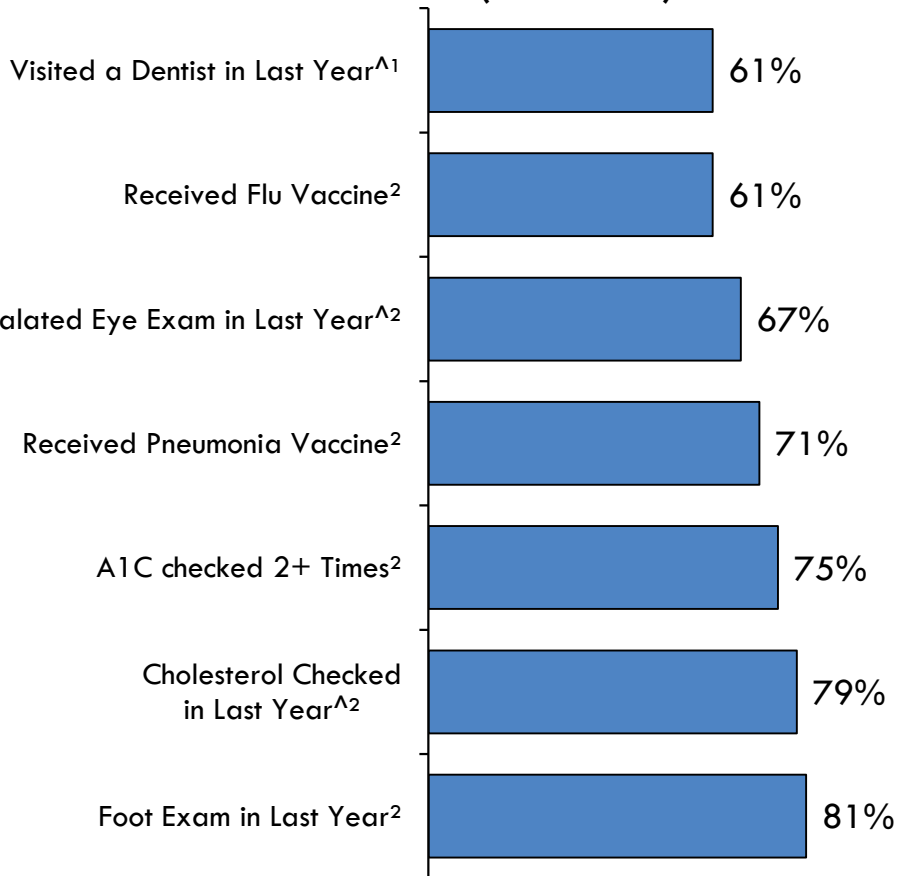
Source: Vermont Behavioral Risk Factor Surveillance System 2014 (dental care) and 2015 (hypertension, cholesterol, nutrition, meeting physical activity recommendations, overweight, smoking, no leisure time physical activity, medical exam).



# Adult Management of Diabetes



## Physician-Led Management Strategies for Adults with Diabetes (2014-2015)<sup>†</sup>



Source:

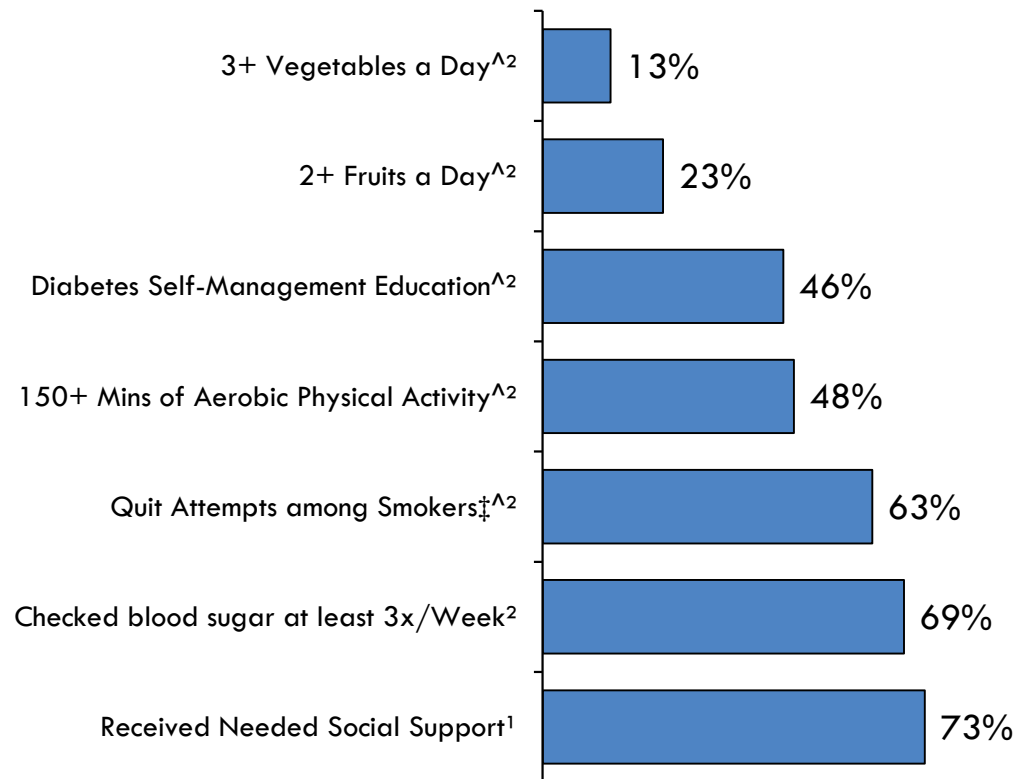
<sup>1</sup>Vermont Behavioral Risk Factor Surveillance System 2014.

<sup>2</sup>Vermont Behavioral Risk Factor Surveillance System 2015.

- Over half of adults with diabetes (61%) received oral healthcare from a dentist, dental hygienist, or dental clinic in 2014.
- Two-thirds of Vermont adults with diabetes in 2015 received an annual dilated eye exam (67%), above the Healthy Vermonters 2020 target of 60%.
- Eight in ten (81%) Vermont adults with diabetes had a health professional check their feet for sores or irritations in the last year as the most common physician-led management strategy.
- Over three-quarters of adult Vermonters with diabetes had their cholesterol checked in the last year (79%).
  - 52% of all adults with diabetes in 2014 had their blood sugar checked within the last 3 years.

# Adult Self-Management of Diabetes

## Self-Management Strategies for Diabetes (2014-2015)<sup>†</sup>



Source:

<sup>1</sup>Vermont Behavioral Risk Factor Surveillance System 2014.

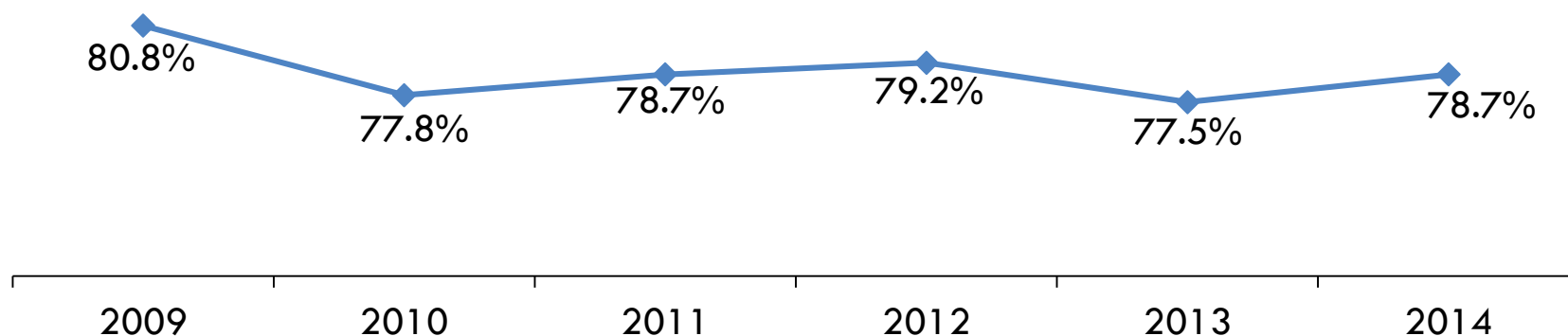
<sup>2</sup>Vermont Behavioral Risk Factor Surveillance System 2015.

- About two-thirds of adults (63%) with diabetes who smoked in 2015 attempted to quit.
- Less than half (46%) of adults with diabetes in 2015 said they had attended diabetes self-management education. This is below the Healthy Vermonters 2020 target of 60%.
- Approximately three-quarters of adult Vermonters with diabetes in 2014 had the social support they needed (73%).
- Almost seven in ten (69%) adults with diabetes in 2015 checked their own blood sugar at least 3 times per week.
- Less than half (48%) of adults with diabetes in 2015 said that they engaged in 150 or more minutes of physical activity a week. Less than a quarter ate the recommended amount of fruit (23%) or vegetables (13%).

# Antidiabetic Medication Adherence

Medication adherence is measured using “proportion of days covered” (PDC). PDC refers to proportion of days an insured person has filled a supply of medication in relation to the number of days they should be covered for, following their first prescription date during a year. In 2014, 78.7% of insured Vermont adults ages 18-64 with diabetes, who were not taking insulin, were at least 80% adherent to their medication regimens. Medication adherence did not differ significantly between commercial insurance plans and Medicaid from 2009 to 2014.

**Proportion of Insured Vermont Adults 18-64 With Diabetes Who Are At Least 80% Adherent with their Antidiabetic Medication Regimens**



Source: Vermont Healthcare Uniform Reporting and Evaluation System (VHCURES) 2009-2014.



# Gestational Diabetes

# Gestational Diabetes

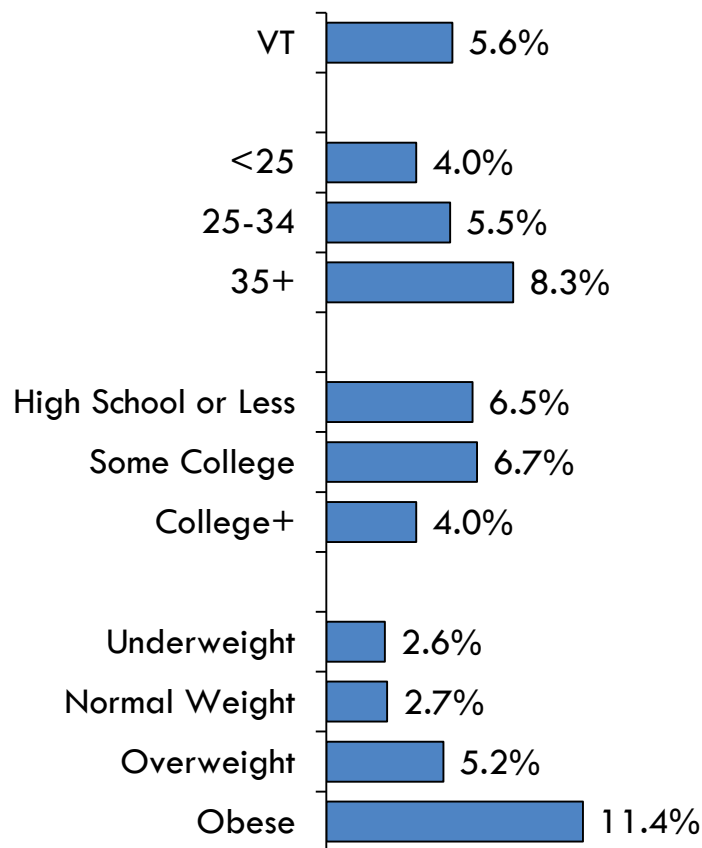
- Gestational diabetes is a condition with high blood sugar in the diabetes range that develops during pregnancy and usually reverses to normal blood sugar after pregnancy. It can cause pregnancy complications, as well as increased risk of developing diabetes later in life for the mother.
- During pregnancy, usually around the 24<sup>th</sup> week, many women may develop high blood glucose (sugar) levels in their blood due to insulin resistance. This is known as gestational diabetes.
  - ▣ Little is known about the exact cause of gestational diabetes but it is believed that hormones that help the baby develop also block the action of insulin in the mother's body.
- Proper management of blood sugar levels during pregnancy is essential to the health of both mother and baby.

Source: American Diabetes Association, Gestational Diabetes, June 20, 2014.

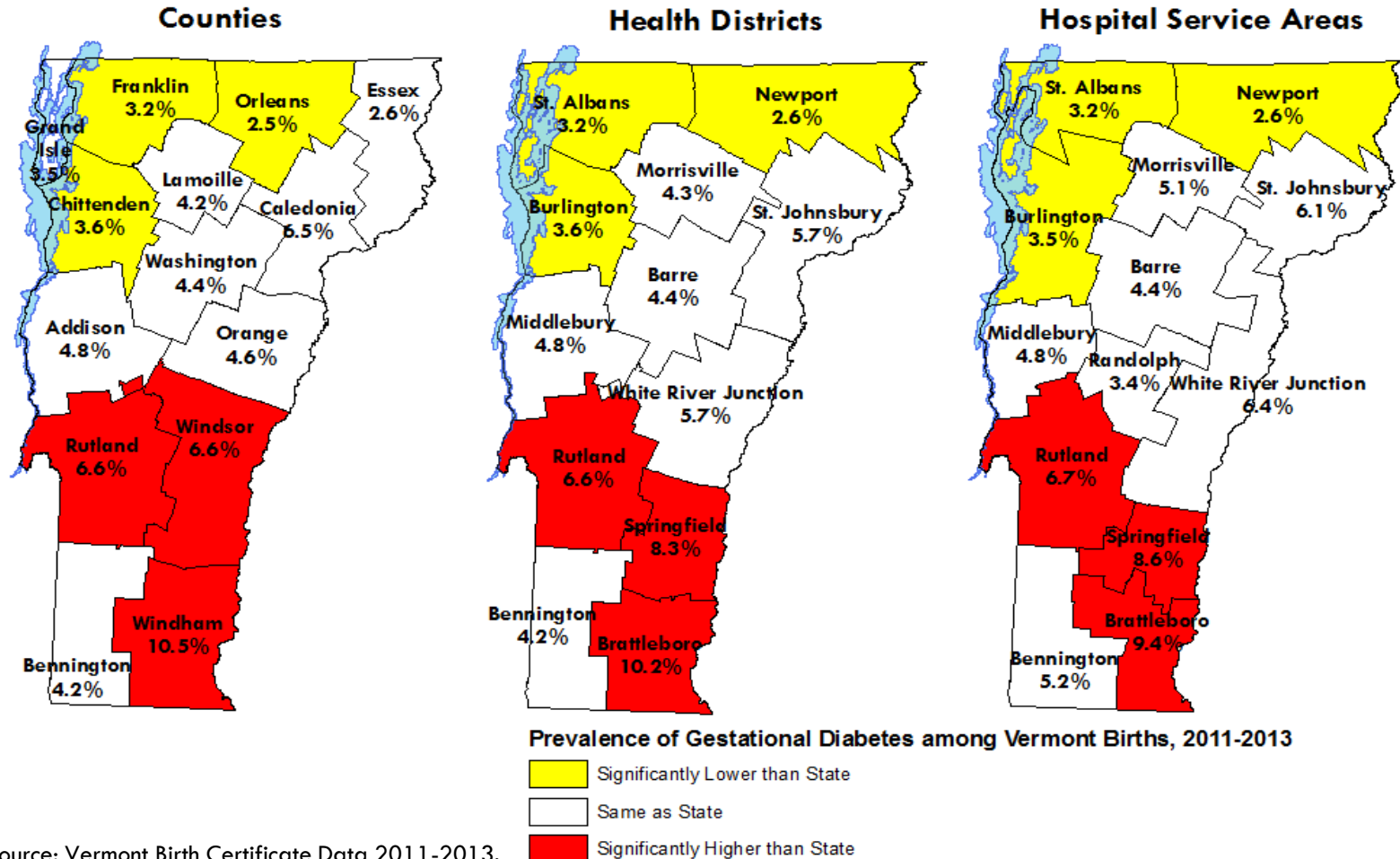
# Vermont Mothers with Gestational Diabetes

- One in eighteen (5.6%) births in Vermont in 2013 occurred to mothers with gestational diabetes (represents 254 births).
- ▣ Gestational Diabetes was more likely among mothers 35 or older than 34 or younger.
- ▣ Those with a college degree or higher were significantly less likely to have gestational diabetes than those with less education.
- ▣ Mothers who were obese pre-pregnancy were significantly more likely to have gestational diabetes than any other weight category.

**Incidence of Births to Vermont Mothers with Gestational Diabetes, 2013**



Source: Vermont Birth Certificate Data, 2013.



Source: Vermont Birth Certificate Data 2011-2013.

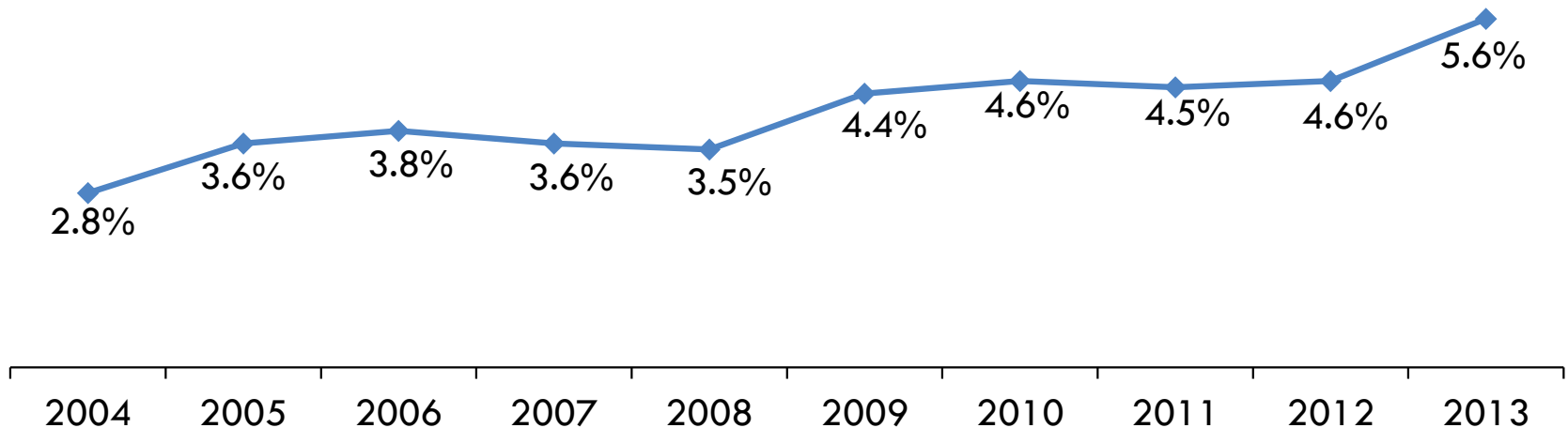
## Prevalence of Gestational Diabetes among Vermont Births by Subgeography

Regionally, the northern part of the state showed significantly lower rates of births to Vermont mothers with gestational diabetes. Areas in the southern part of the state showed significantly higher rates of births to mothers with gestational diabetes, except for Bennington county and the Bennington health district and hospital service area (HSA).

# Prevalence of Gestational Diabetes among All Vermont Births

Since 2004, the rate of gestational diabetes among Vermont births has significantly increased (2.8% to 5.6%). The increase from 2012 to 2013 was not statistically significant. The steep increases in gestational diabetes seen in 2005 and again in 2009 are likely related to better capture of gestational diabetes due to enhanced electronic reporting.

**Prevalence of Gestational Diabetes among All Vermont Births**



Source: Vermont Birth Certificate Data 2004-2013.





# End-Stage Renal Disease (ESRD)

# End-Stage Renal Disease (ESRD)

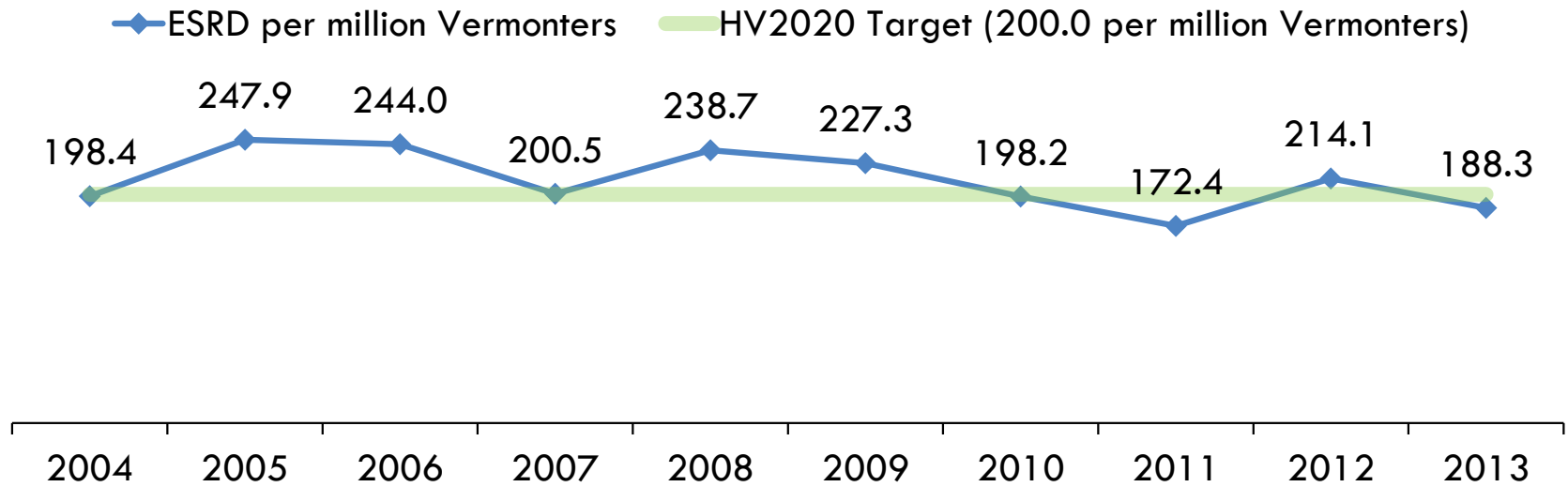
- ESRD is the final stage (Stage 5) of Chronic Kidney Disease and also known as end-stage renal failure or late chronic renal insufficiency.
  - ▣ Chronic Kidney Disease is caused by diabetic nephropathy (kidney damage from excess blood sugar), high blood pressure (hypertension), glomerular diseases (various types of kidney diseases), inherited/congenital kidney diseases, poisons, and trauma to the kidneys.
- Those experiencing ESRD will typically have 10-15% of normal kidney function.
- ESRD symptoms include: anemia, headache, fatigue, weakness, nausea, vomiting, thirst, muscle cramps/twitching/numbness in limbs, high blood pressure, poor digestion, decreased urinary output, and mental symptoms (lowered alertness, trouble concentrating, seizures).

Source: National Kidney Center, Chronic Kidney Disease.

# New Cases of ESRD

The rate of new cases of ESRD among Vermonters as of 2013 was 188.3 cases for every 1 million Vermonters. This rate has decreased from 214.1 cases for every 1 million Vermonters in 2012 and moved below the Healthy Vermonters 2020 target of 200.0 cases for every one million Vermonters and the 2009 baseline of 227.3 cases per million Vermonters.

**Rate of New Cases of End-Stage Renal Disease (ESRD), 2004-2013**



Source: U.S. Renal Data System 2004-2013.



# Prediabetes

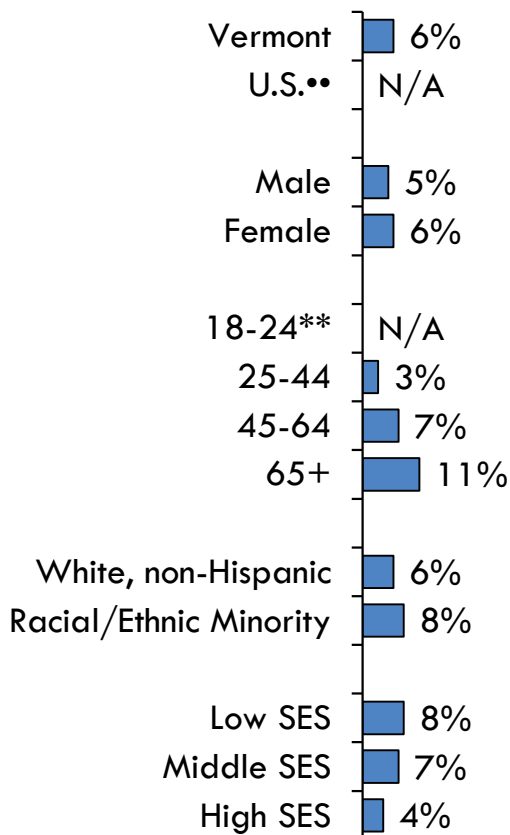
# Prediabetes

- Prediabetes, sometimes referred to as impaired glucose (blood sugar) tolerance (IGT) or impaired fasting glucose (IFG), is classified by blood glucose (sugar) levels that are higher than normal but not high enough to be diagnosed as diabetes.
- Prediabetes has no clear symptoms; however, some people will have some of the same symptoms or health complications of diabetes.
- Prediabetes places you at increased risk for developing type 2 diabetes and cardiovascular disease.

Source: American Diabetes Association, Diagnosing and Learning About Prediabetes. September 22, 2014.

# Adult Vermonters with Prediabetes†

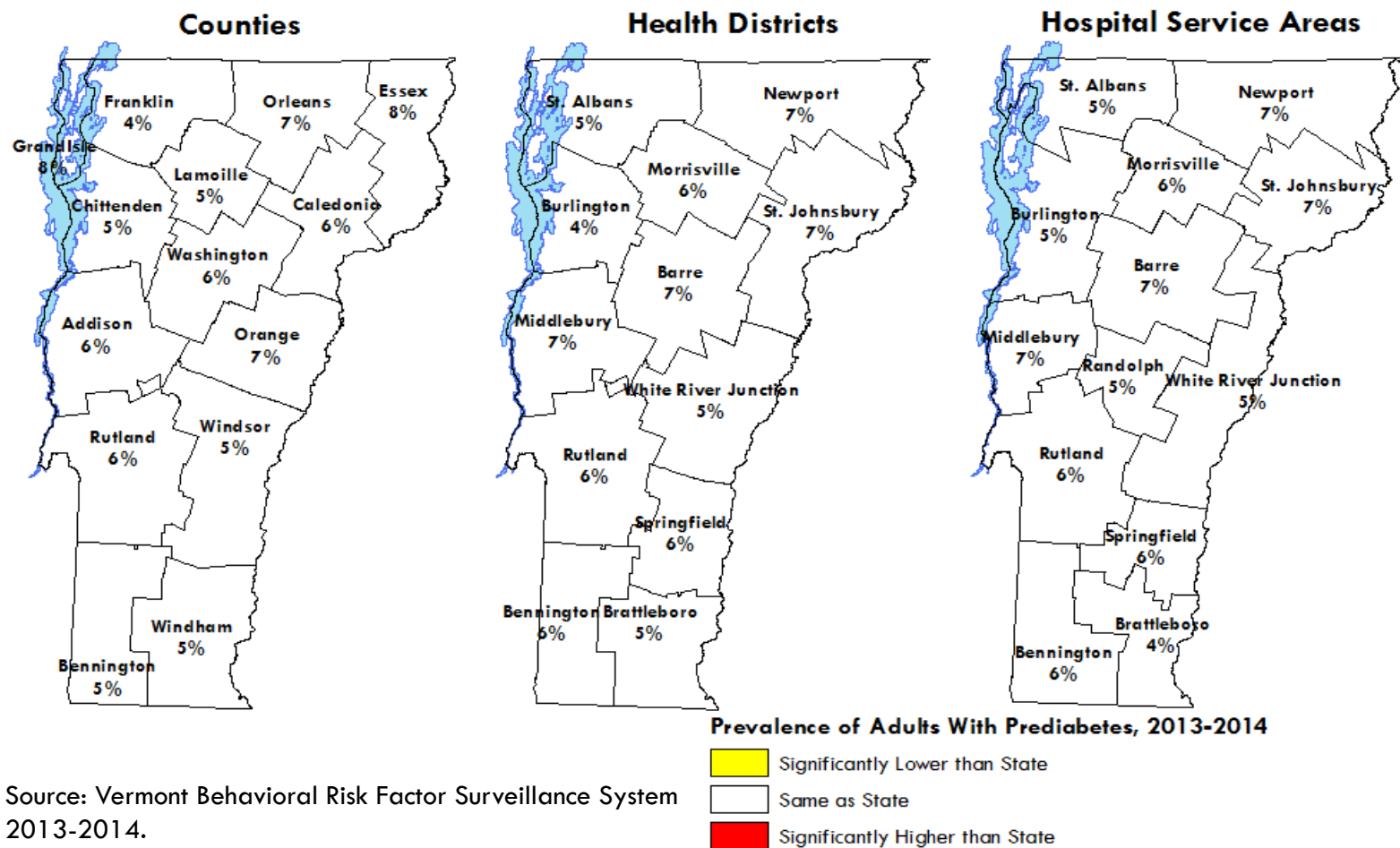
## Prevalence of Adults with Prediabetes, 2014<sup>1</sup>



- About one in sixteen (6%) Vermont adults had prediabetes in 2014 (or approximately 27,000 adults).<sup>1</sup>
  - ▣ As age increases the prevalence of prediabetes significantly increases.
  - ▣ Adults living at a high socioeconomic status were significantly less likely to have prediabetes than those living at a middle or low socioeconomic status.
- Most prediabetes goes undiagnosed, therefore the reported prevalence likely underestimates the true impact of prediabetes in Vermont.
  - ▣ Over a third (37%) of U.S. adults are estimated to have prediabetes.<sup>2</sup> This means an additional 157,000 Vermont adults may have prediabetes and not know it.

Source: <sup>1</sup>Vermont Behavioral Risk Factor Surveillance System 2014.

<sup>2</sup>CDC, National Center for Chronic Disease Prevention and Health Promotion, National Diabetes Statistics Report, 2014.



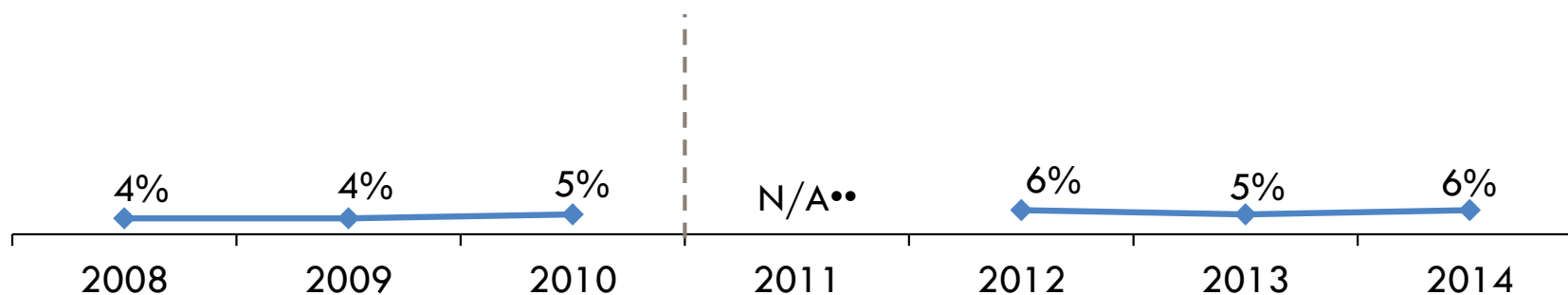
## Prevalence of Adults with Prediabetes by Subgeography

All state subgeographies show similar rates of adults with prediabetes when compared to the state average. This indicates that, as with diabetes itself, prediabetes is of similar concern in all areas across the state.

# Adult Prevalence of Prediabetes†

The prevalence of prediabetes in Vermont has not changed significantly from 2008 through 2014.

## Prevalence of Adults with Prediabetes<sup>1•</sup>



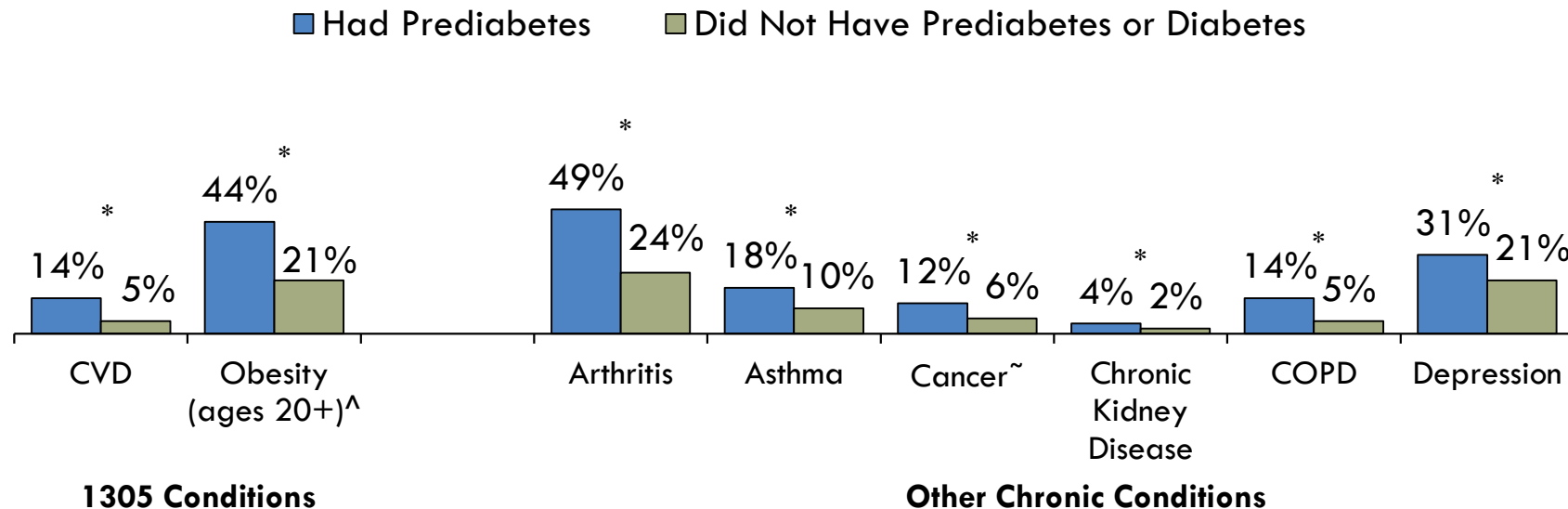
Source: Vermont Behavioral Risk Factor Surveillance System 2008-2014.



# Prevalence of Chronic Disease among Adults with Prediabetes

Of Vermont adults who had prediabetes, close to half (44%) were also obese and 14% also had cardiovascular disease (CVD). Close to half of adult Vermonters with prediabetes also had arthritis (49%) and a third had a depressive disorder (31%). Vermont adults with prediabetes were significantly more likely to have all of the comorbid chronic conditions shown below than adults who did not have prediabetes or diabetes.

**Prevalence of Chronic Disease among Adults with Prediabetes, 2014<sup>†</sup>**



Source: Vermont Behavioral Risk Factor Surveillance System 2014.

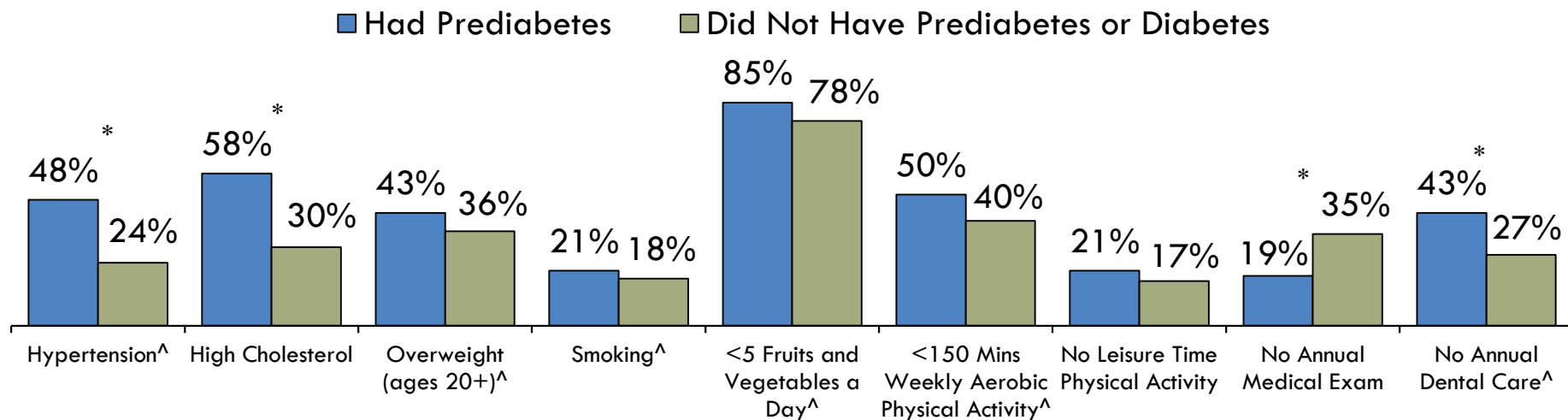
# Chronic Disease Risk Factors among Adults with Prediabetes



Vermont adults with prediabetes were significantly more likely to have hypertension, high cholesterol, and receive no annual dental care when compared to adults who did not have prediabetes or diabetes. Adult Vermonters who had prediabetes were significantly less likely to not get an annual medical exam than adults who did not have prediabetes or diabetes.

Fifty percent of adults with prediabetes met their aerobic physical activity guidelines, this is below the Healthy Vermonters 2020 target of 58%.

## Prevalence of Chronic Disease Risk Factors among Adults with Prediabetes<sup>†</sup>



Source: Vermont Behavioral Risk Factor Surveillance System 2013 (hypertension, cholesterol, nutrition, meeting physical activity recommendations) and 2014 (overweight, smoking, no leisure time physical activity, medical exam, dental care).

# Cardiovascular Disease (CVD)

Coronary Heart Disease

Heart Attack

Stroke

# Cardiovascular Disease (CVD)

- CVD is a term that refers to several types of heart conditions, including coronary heart disease, heart attack, and stroke.<sup>1</sup>
- Certain things can increase the risk of CVD including: several health conditions, lifestyle, age, and family history.<sup>1</sup>
  - ▣ Almost half of Americans<sup>1</sup> and over half of Vermonters<sup>2</sup> have at least one of the key risk factors for CVD: high blood pressure (hypertension), high cholesterol, or smoking.
  - ▣ Other health conditions and behaviors that can lead to CVD are diabetes, overweight and obesity, poor diet, physical inactivity, and excessive alcohol use.<sup>1</sup>
- CVD is one of the leading causes of death in the U.S.<sup>1</sup> and in Vermont<sup>3</sup>.

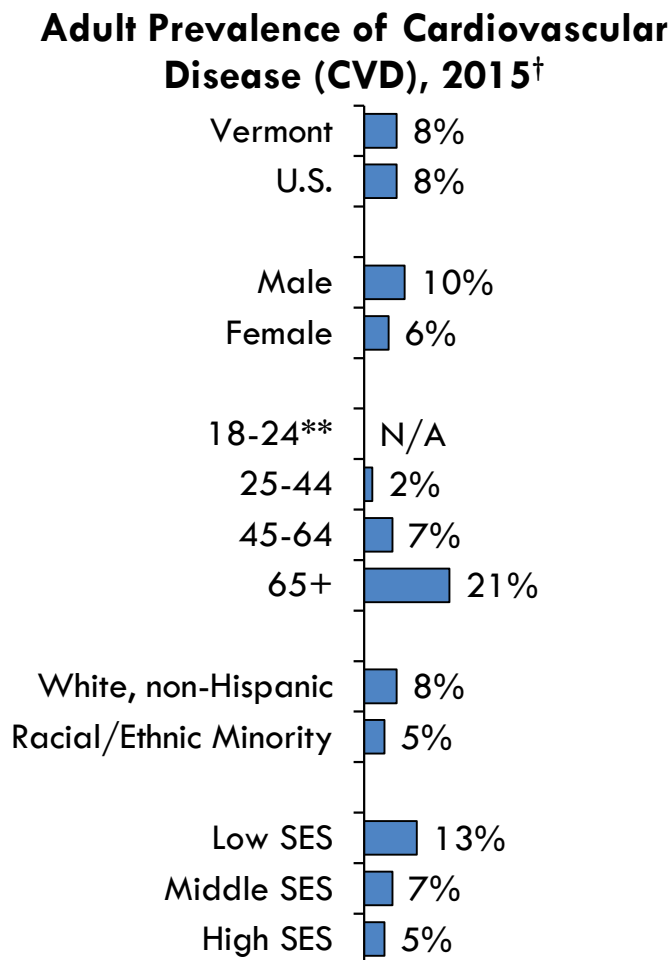
Source: <sup>1</sup>Centers for Disease Control and Prevention, Heart Disease, August 10, 2015.

<sup>2</sup>Vermont Behavioral Risk Factor Surveillance System 2015.

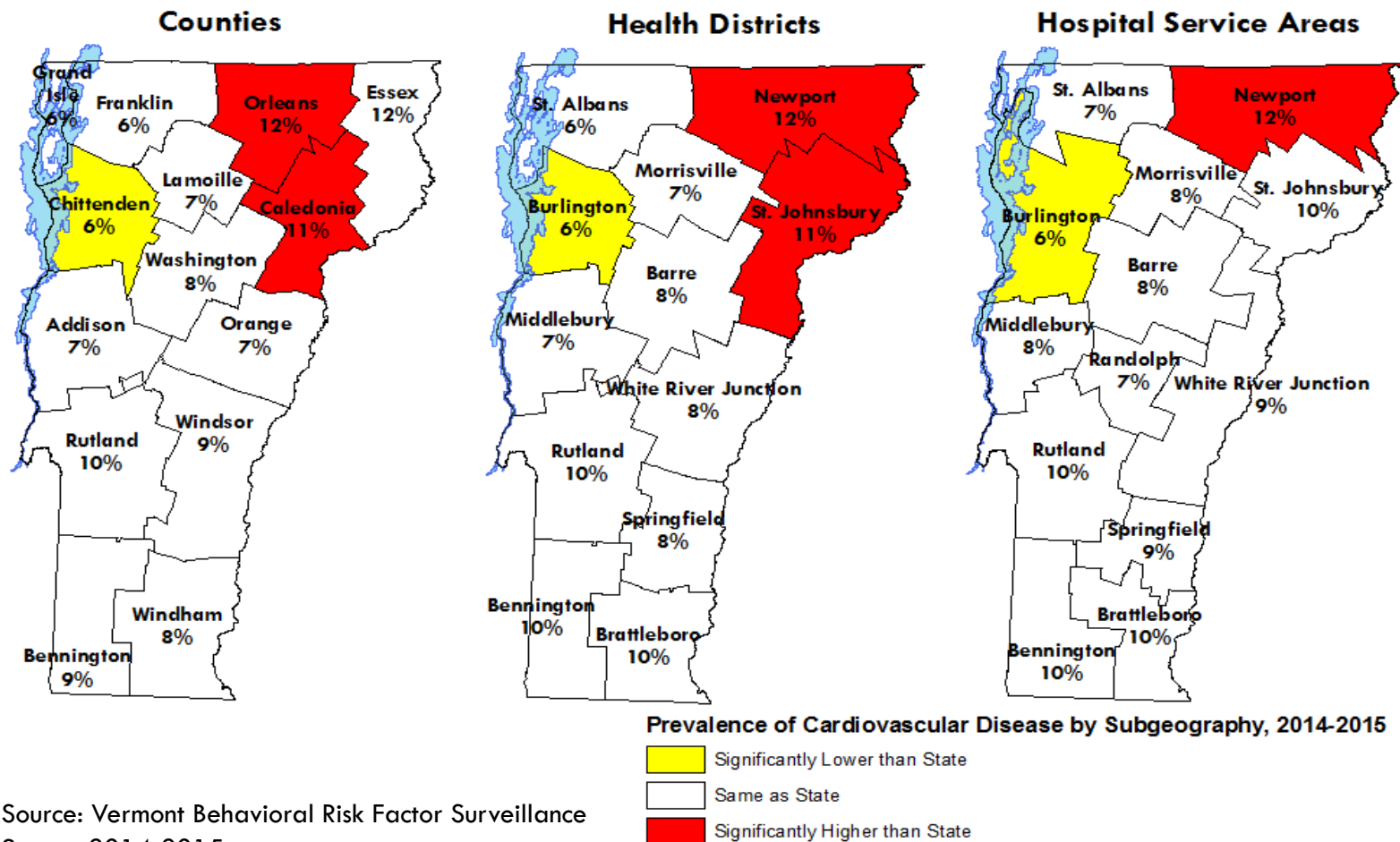
<sup>3</sup>Vermont Vital Statistics 2014.

# Adults with Cardiovascular Disease

- About 8% of Vermont adults have been diagnosed with cardiovascular disease (CVD) (or approximately (40,400 adults).
- ▣ Vermont adults were similarly likely to have CVD when compared to U.S. adults overall.
- ▣ Males were significantly more likely to have CVD than females.
- ▣ The prevalence of CVD significantly increased with advancing age.
- ▣ Those with lower socioeconomic status were significantly more likely to have CVD.



Source: Vermont Behavioral Risk Factor Surveillance System 2015.



Source: Vermont Behavioral Risk Factor Surveillance System 2014-2015.

## Adult Prevalence of Cardiovascular Disease by Subgeography

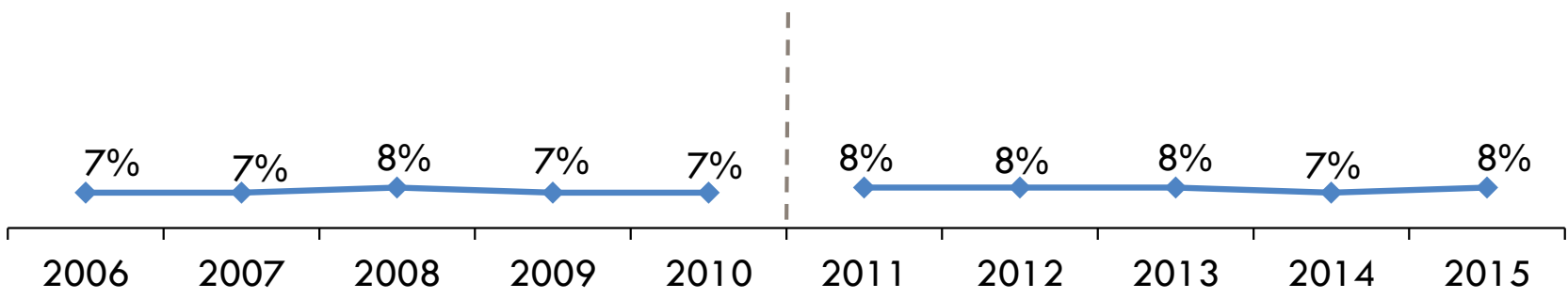
Regionally the northeastern area of the state has significantly higher rates of CVD when compared to the state average.

# Adult Prevalence of Cardiovascular Disease†



The prevalence of CVD in Vermont has remained stable and statistically unchanged since 2005. This includes 4% who had been diagnosed with coronary heart disease (CHD), 5% who had a heart attack, and 3% who had a stroke in 2015. The rates of CHD, heart attack, and stroke are also similar to previous years.

**Prevalence of Adults with Cardiovascular Disease•**

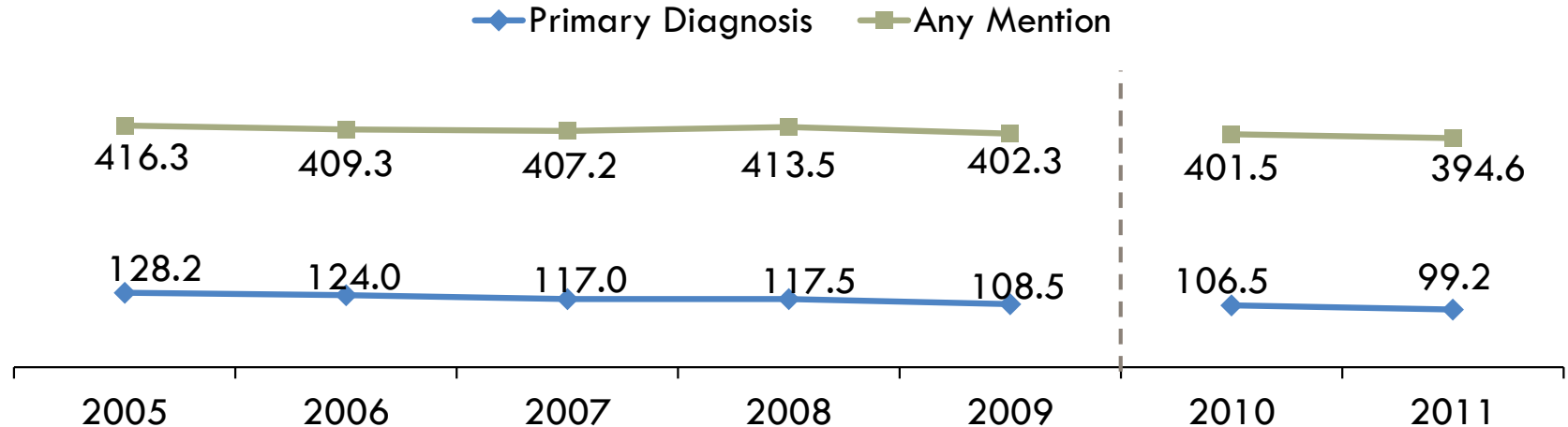


Source: Vermont Behavioral Risk Factor Surveillance System 2006-2015.

# Cardiovascular Disease-Related Hospital Discharges<sup>†</sup>

In 2011, there were 99.2 hospital discharges with a primary diagnosis of CVD for every 10,000 Vermonters (7,422 discharges). This is significantly lower than in 2010. Any mention of CVD as a factor for hospitalization occurred in 394.6 hospital discharges for every 10,000 Vermonters (29,366 discharges) indicating a substantial number of discharges with CVD as a contributing factor.

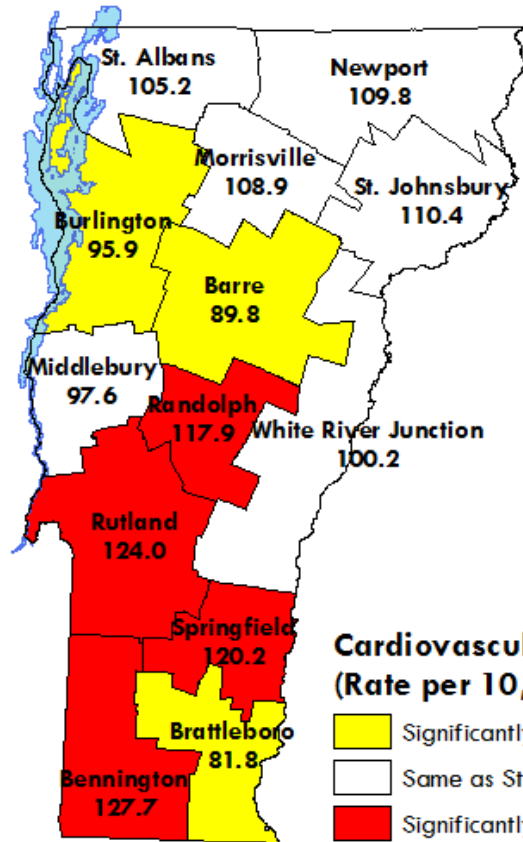
**Hospital Discharge with a CVD Diagnosis (rate per 10,000 Vermonters)<sup>^</sup>**



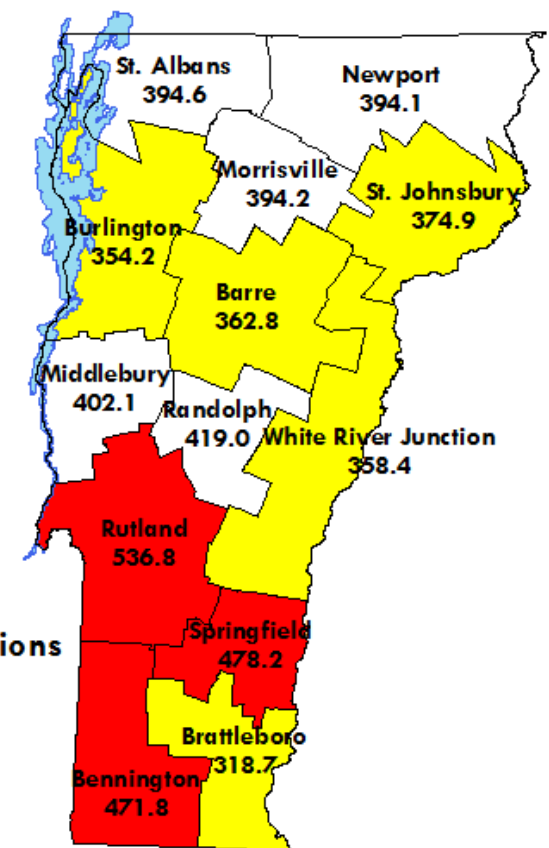
Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2005-2011.<sup>α</sup>



## Primary Diagnosis



## Any Mention



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2009-2011.<sup>1a</sup>

## CVD-Related Hospital Discharges by Hospital Service Area (HSA)<sup>†</sup>

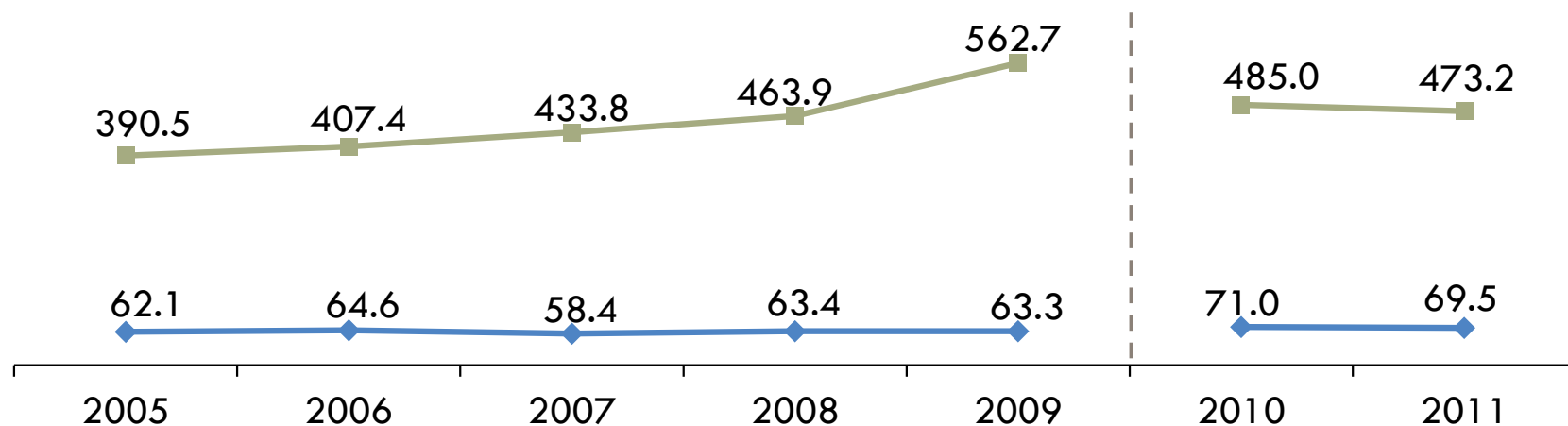
Hospital discharges with a primary diagnosis of CVD were significantly higher than the state average in central and southwestern Vermont, when compared to the state average. Any mention of CVD generally mirrored the rate of CVD as a primary diagnosis but was much higher throughout all HSAs while a few HSAs were of lesser significance for any mention.

# Cardiovascular Disease-Related Emergency Department Visits<sup>†</sup>

In 2011, there were 69.5 ED visits with a primary diagnosis of CVD for every 10,000 Vermonters (5,134 ED visits). For every 10,000 Vermonters, 473.2 had any mention of CVD during an ED visit (34,637 ED visits). As a primary diagnosis during an ED visit, CVD remained stable from 2010 to 2011. Any mention of CVD during an ED visit significantly decreased from 2010 to 2011. The higher rates for any mention of CVD indicates that it is an important contributing factor for ED visits.

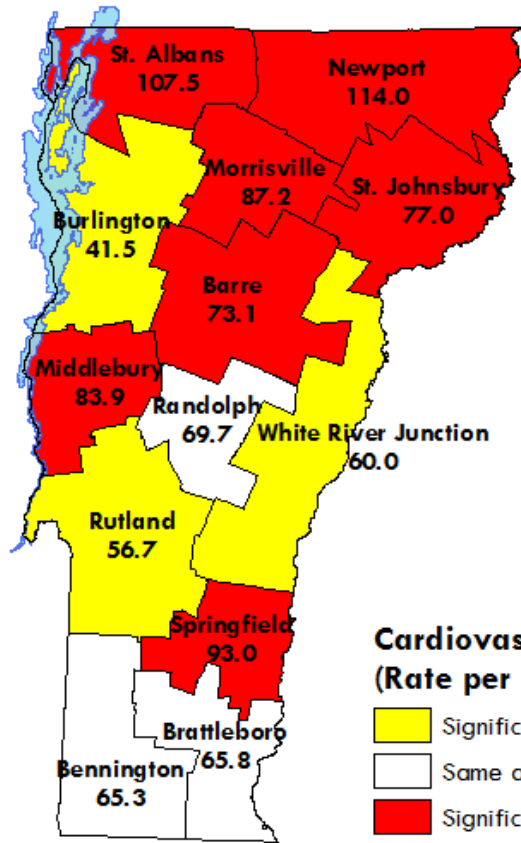
## ED Visits with a CVD Diagnosis (Rate per 10,000 Vermonters)<sup>^</sup>

—◆— Primary Diagnosis    —■— Any Mention

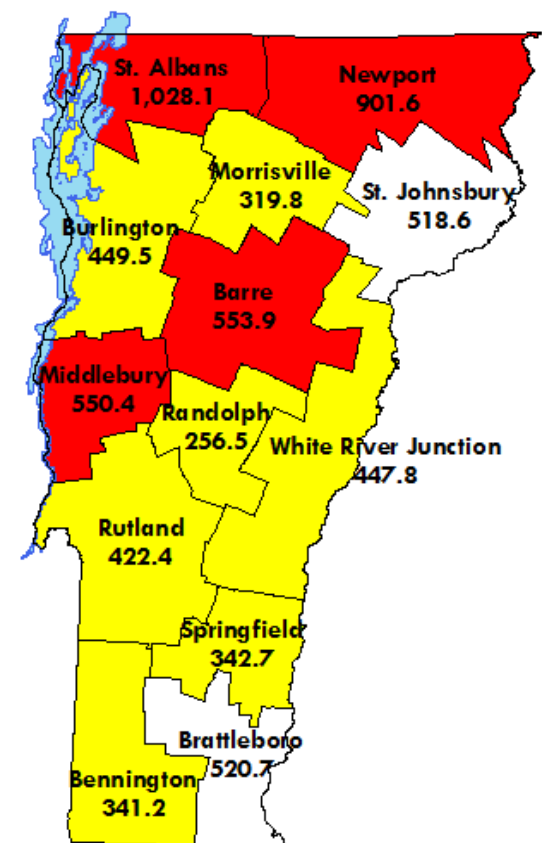


Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2005-2011.<sup>□</sup>

## Primary Diagnosis



## Any Mention



**Cardiovascular Disease ED Visits  
(Rate per 10,000 Vermonters)**

- Significantly Lower than State
- Same as State
- Significantly Higher than State

Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2009-2011.<sup>1a</sup>

## CVD-Related Emergency Department Visits by Hospital Service Area (HSA)<sup>†</sup>

Northern and northeastern Vermont HSAs along with Middlebury and Springfield had significantly higher rates of ED visits for CVD as a primary diagnosis when compared to the state average. St. Albans, Newport, Barre, and Middlebury HSAs remained higher for any mention of CVD during an ED visit while Morrisville, St. Johnsbury, and Springfield were of lesser significance.

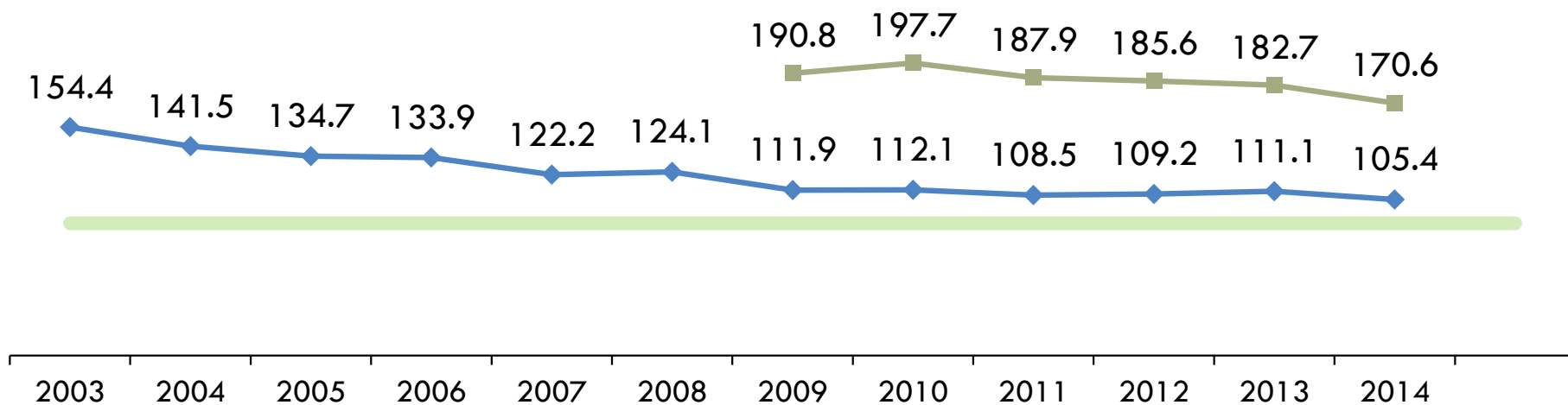
# Coronary Heart Disease Related Mortality†



The all coronary heart disease (CHD) related mortality for Vermont in 2014 was 170.6 deaths per 100,000 Vermonters. CHD deaths as a primary cause of death steadily decreased from 2003 through 2014. In 2014 CHD as a primary cause of death (105.4 deaths for every 100,000 Vermonters) was above the Healthy Vermonters 2020 target of 89.4 deaths for every 100,000 Vermonters but continues to descend below the 2009 baseline.

## Coronary Heart Disease-Related Mortality (Rate per 100,000 Vermonters)^

- ◆ CHD as a primary cause of death
- All CHD-related deaths◇
- HV2020 Target - Primary Cause (89.4 Deaths per 100,000 Vermonters)

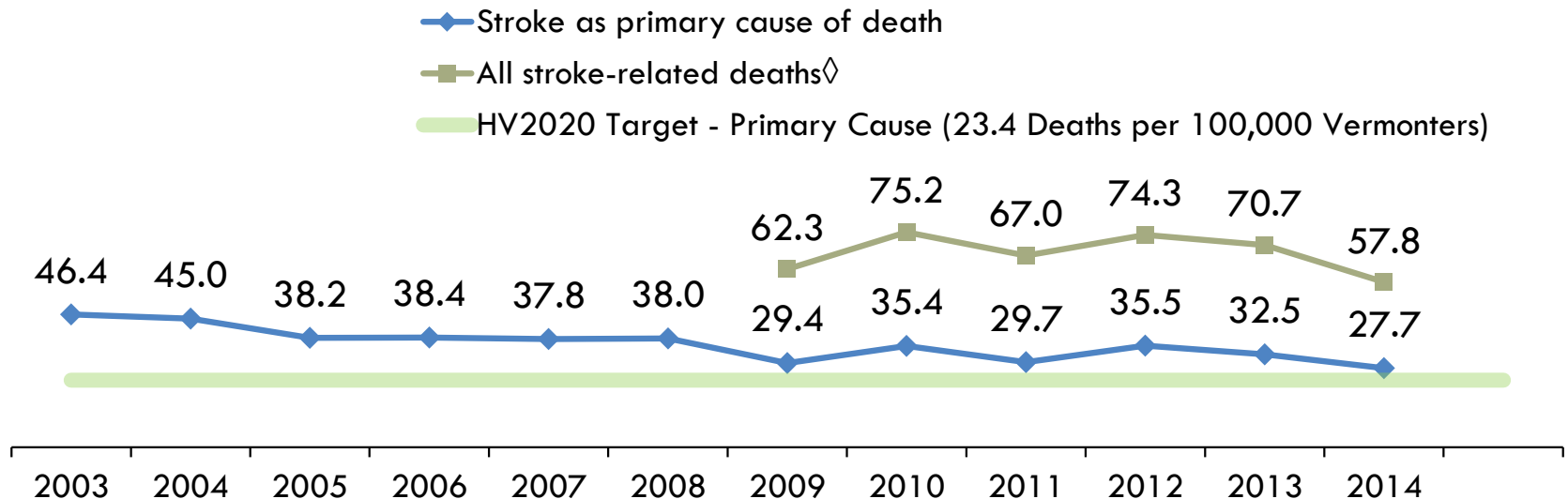


Source: Vermont Vital Statistics 2002-2014.

# Stroke-Related Mortality†

In 2014, the stroke-related death rate was 57.8 deaths for every 100,000 Vermonters and stroke as a primary cause of death was 27.7 per 100,000 Vermonters. Overall, stroke as a primary cause of death has declined slightly from 2005 through 2014. All stroke-related deaths showed the same fluctuations from 2009-2012 and have steadily declined 2012-2014. As a primary cause of death, stroke is above the Healthy Vermonters 2020 target of 23.4 deaths for every 100,000 Vermonters but below the 2009 baseline.

## Stroke-Related Mortality (Rate per 100,000 Vermonters)^



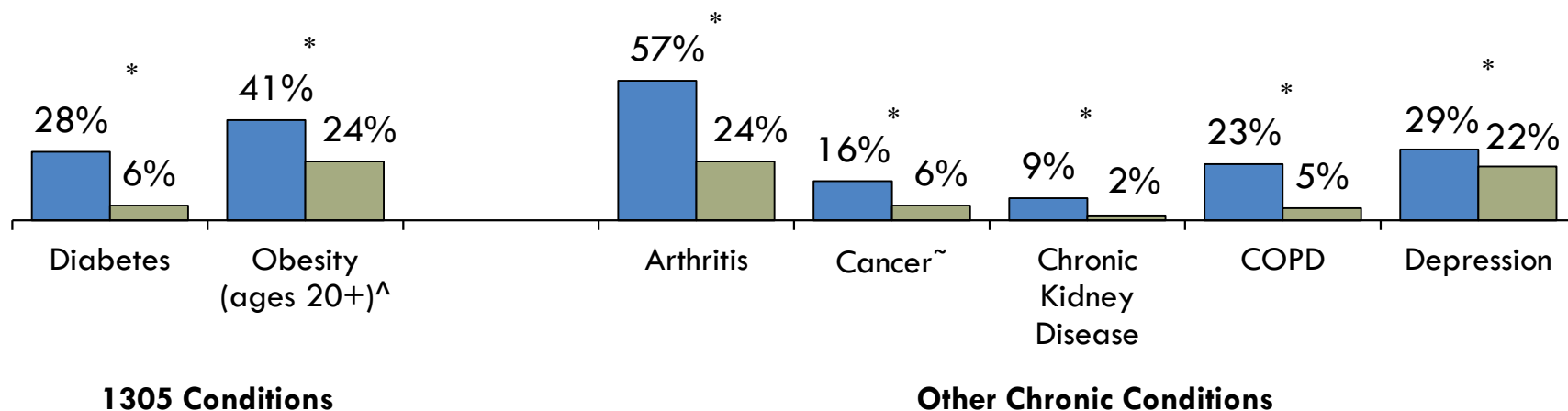
Source: Vermont Vital Statistics 2002-2014.

# Chronic Disease Comorbidities for Adults with Cardiovascular Disease

Four in ten (41%) of adults with cardiovascular disease (CVD) were also obese. Almost three in ten (28%) also had diabetes. About six in ten (57%) adult Vermonters who had CVD in 2015 also had arthritis. Adult Vermonters with CVD were significantly more likely to have arthritis, cancer, chronic kidney disease, COPD, depression, diabetes, and be obese than adults who did not have CVD. There was no significant difference in the prevalence of asthma (data not shown) between adults who had CVD and did not have CVD.

## Prevalence of Chronic Disease Comorbidities among Adults with Cardiovascular Disease, 2015<sup>†</sup>

■ Had CVD ■ Did Not Have CVD



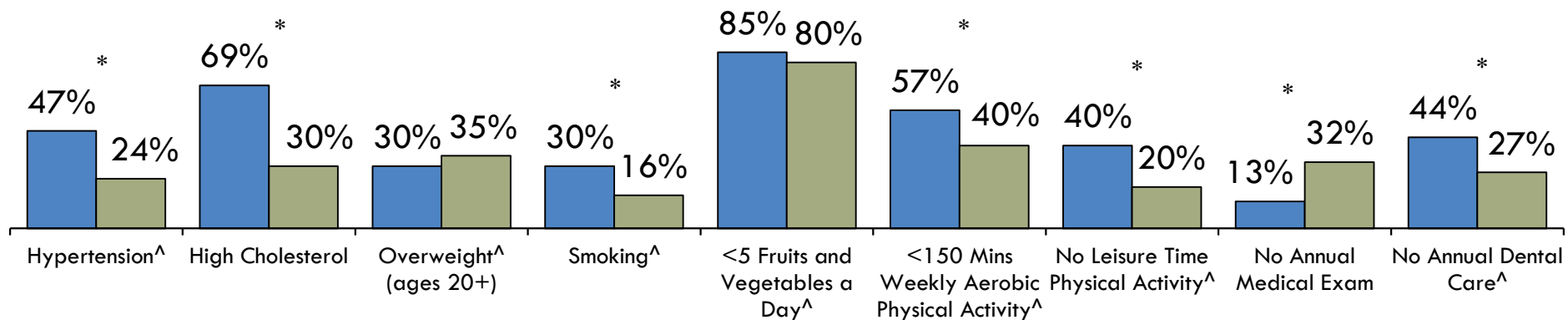
Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Adults with Cardiovascular Disease and Chronic Disease Risk Factors

Adults with CVD were significantly more likely to have hypertension, high cholesterol, smoke, not meet weekly physical activity recommendations, participate in no leisure time physical activity, and not receive annual dental care when compared to adults who did not have CVD. Adults who had CVD were significantly less likely to not get an annual medical exam when compared to adults who did not have CVD.

**Prevalence of Chronic Disease Risk Factors among Adults with Cardiovascular Disease†**

■ Had CVD ■ Did Not Have CVD



Source: Vermont Behavioral Risk Factor Surveillance System 2015 (hypertension, cholesterol, overweight, physical activity, nutrition, medical exam) and 2014 (dental care).



# Hypertension



# Hypertension

- Blood pressure normally rises and falls throughout the day. If it remains high for a long time, it can cause damage to the heart.<sup>1</sup>
- Having high blood pressure (hypertension) raises the risk for heart disease and stroke, which are some of the leading causes of death in the U.S.<sup>1</sup> and in Vermont<sup>2</sup>.
  - ▣ With age blood vessels become less flexible and increase the pressure throughout the circulatory system. This increases the risk of hypertension with advancing age.<sup>3</sup>
  - ▣ Hypertension can further harden the arteries which decreases blood flow, and increasing the risk for health issues at any.<sup>1</sup>
- There are no warning signs or symptoms for hypertension and many people do not know they have it.<sup>1</sup>

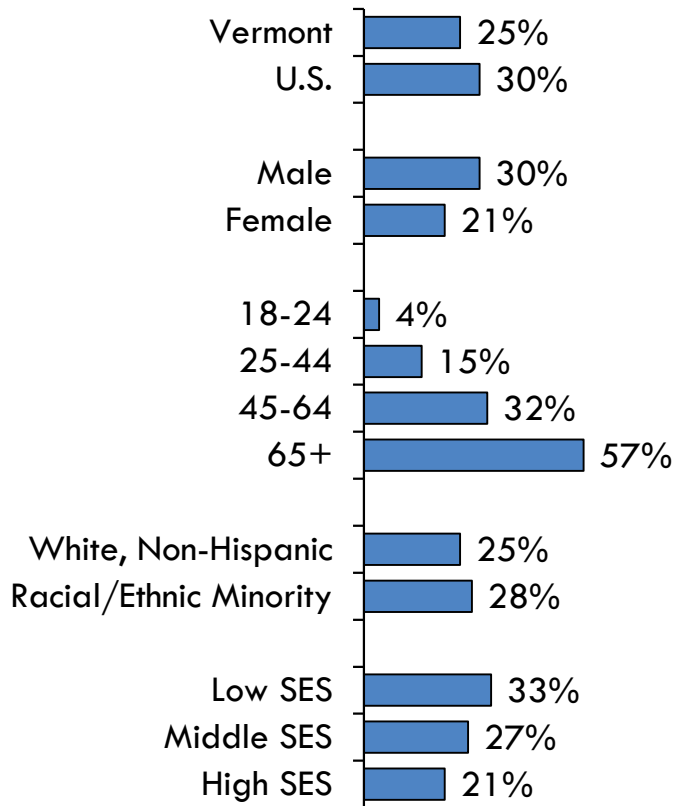
Source: <sup>1</sup>Centers for Disease Control and Prevention, High Blood Pressure, July 7, 2014.

<sup>2</sup>Vermont Vital Statistics, 2014.

<sup>3</sup>American Heart Association, Understand Your Risk for High Blood Pressure, September 4, 2014.

# Adult Vermonters with Hypertension<sup>†</sup>

## Prevalence of Adults with Hypertension, 2015<sup>^</sup>

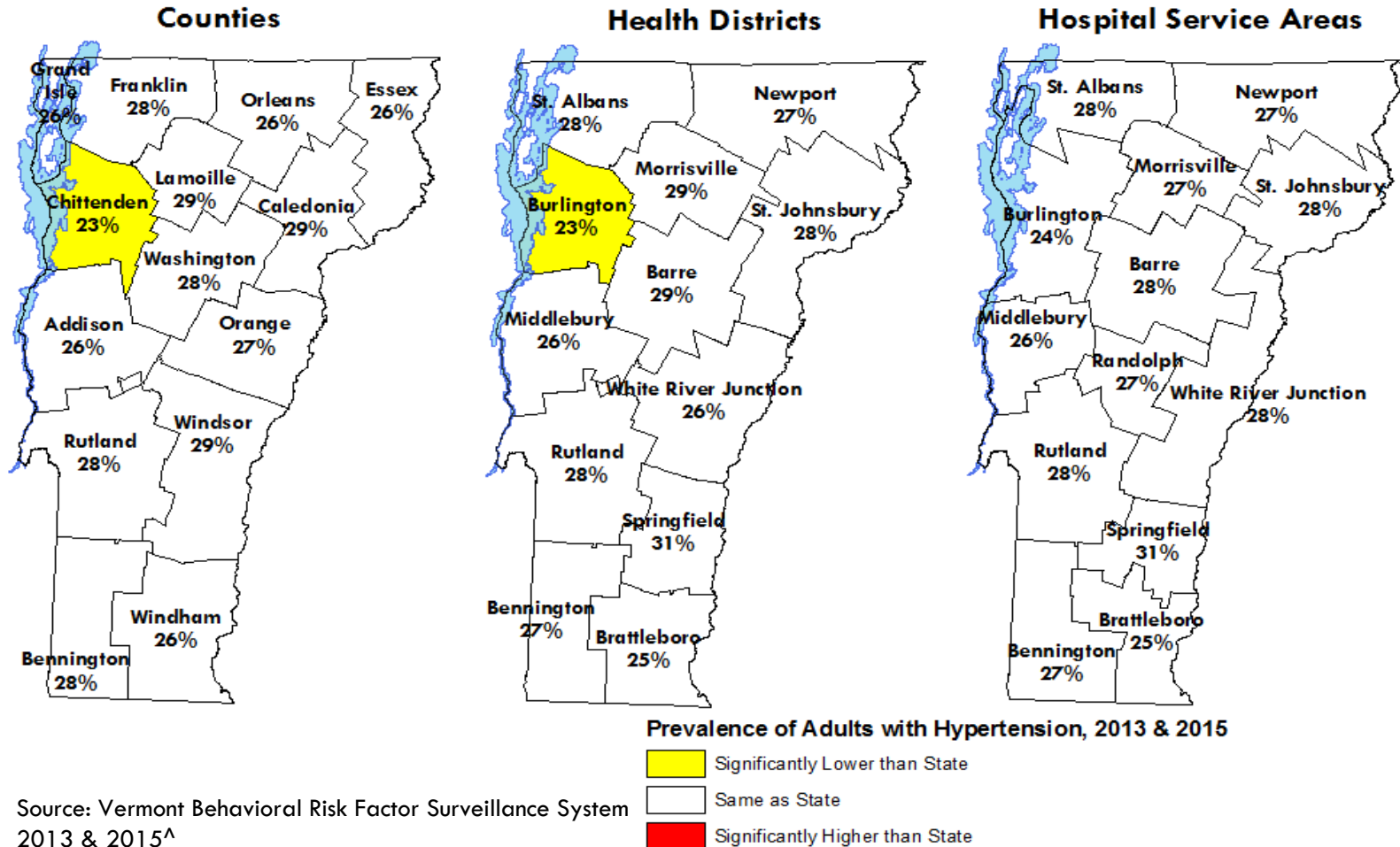


- In 2015 a quarter (25%) of Vermont adults had been diagnosed with hypertension (or approximately 147,600 adults).<sup>1</sup>
  - ▣ Vermont adults were significantly less likely to have hypertension than U.S. adults overall.
  - ▣ Males were significantly more likely than females to have hypertension.
  - ▣ The likelihood of hypertension increases significantly with advancing age.
  - ▣ The prevalence of hypertension increases significantly with decreasing socioeconomic status.
- Up to 1 in 5 adults may have hypertension and not know it.<sup>2</sup> Meaning, approximately 71,700 additional Vermont adults may have hypertension and not be aware of it.

Source: <sup>1</sup>Vermont Behavioral Risk Factor Surveillance System 2015.

<sup>2</sup>Centers for Disease Control and Prevention. 2012.

MMWR; 61(35):703-709.

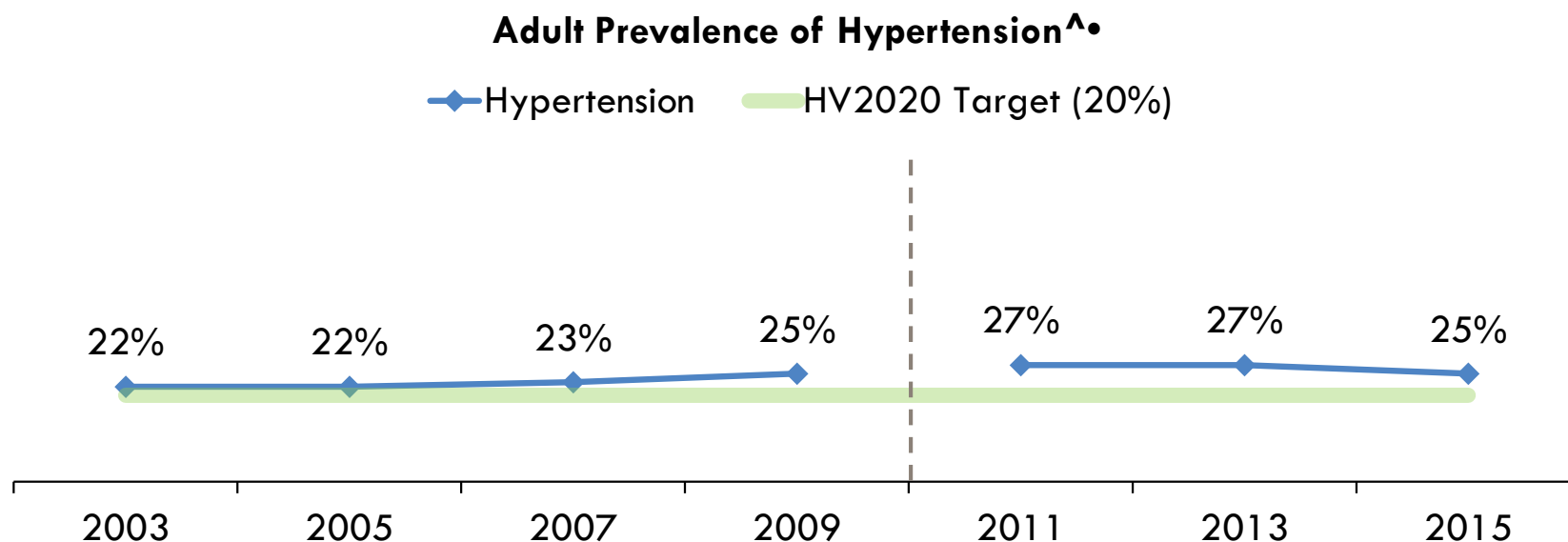


## Adult Rates of Hypertension by Subgeography<sup>†</sup>

Regionally, Chittenden county and the Burlington health district were significantly lower than the state average rate for hypertension (25%). All other regions showed rates statistically similar to the state average.

# Adult Prevalence of Hypertension†

The prevalence of hypertension in Vermont has remained statistically unchanged since 2003. The prevalence of hypertension is above the Healthy Vermonters 2020 target of 20% and at the 2009 baseline.

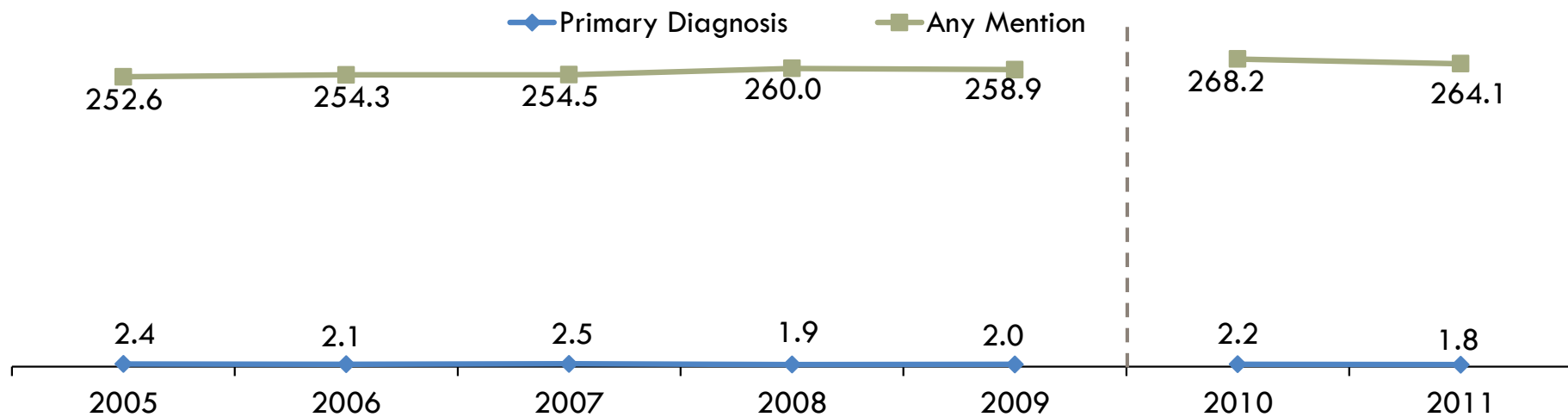


Source: Vermont Behavioral Risk Factor Surveillance System 2003-2015.

# Hypertension-Related Hospital Discharges<sup>†</sup>

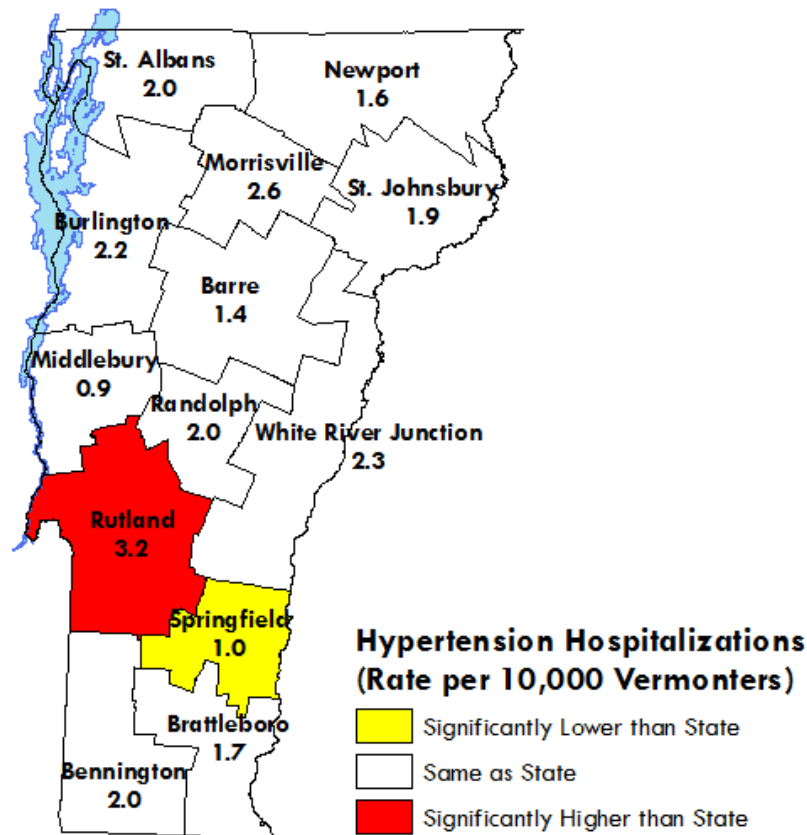
In 2011, there were 1.8 hospital discharges with a primary diagnosis of hypertension for every 10,000 Vermonters (138 discharges). Any mention of hypertension as a factor for hospitalization occurred in 264.1 hospital discharges for every 10,000 Vermonters (20,210 discharges), indicating hypertension is a common contributing factor for hospitalization. There were no statistically significant changes from 2010 to 2011 in the trend for hypertension as a primary diagnosis or any mention during hospitalization.

**Hospital Discharges with a Diagnosis of Hypertension (rate per 10,000 Vermonters)<sup>^</sup>**

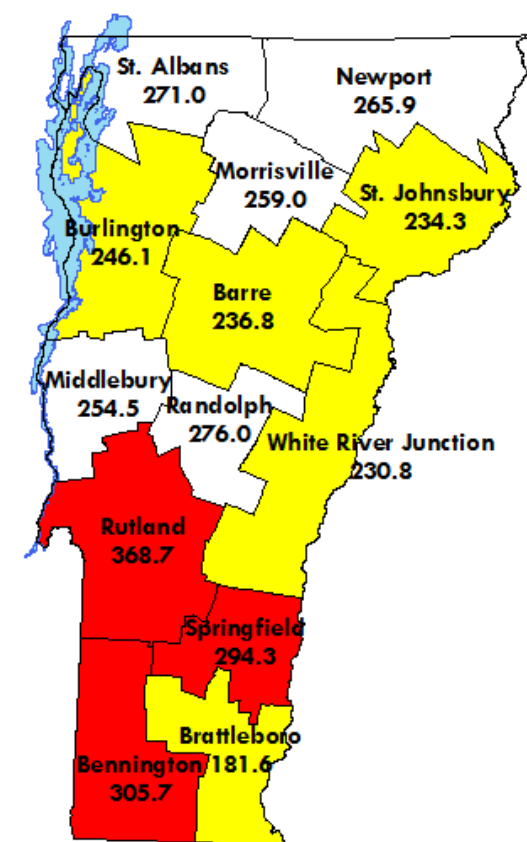


Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2005-2011.<sup>□</sup>

## Primary Diagnosis



## Any Mention



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2009-2011.<sup>1a</sup>

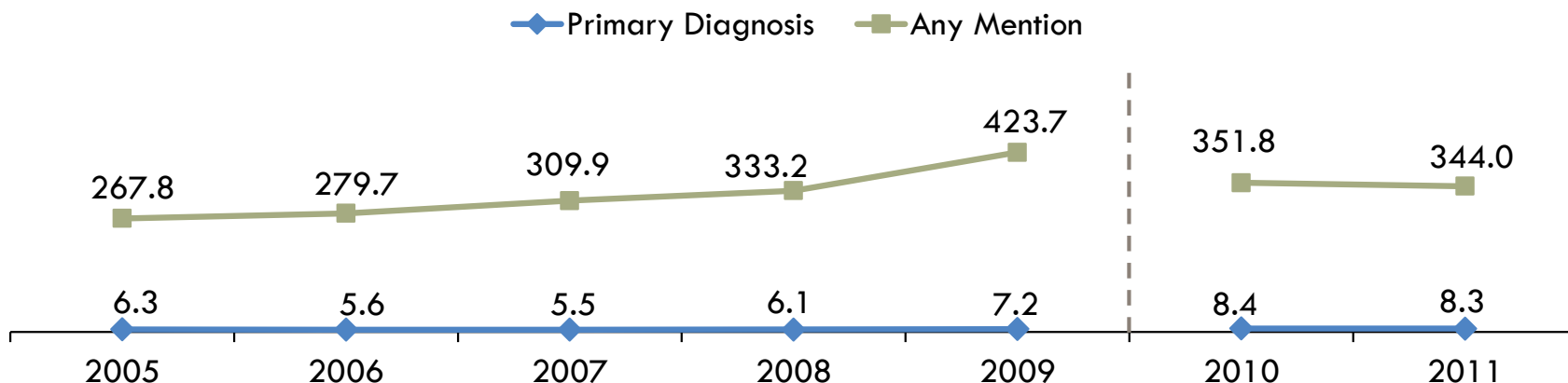
## Hypertension-Related Hospital Discharges by Hospital Service Area (HSA)<sup>†</sup>

The Rutland Hospital Service Area (HSA) was significantly higher for hypertension as a primary diagnosis when compared to the state average. For any mention of hypertension Rutland, Springfield, and Bennington were higher than the state average.

# Hypertension-Related Emergency Department Visits†

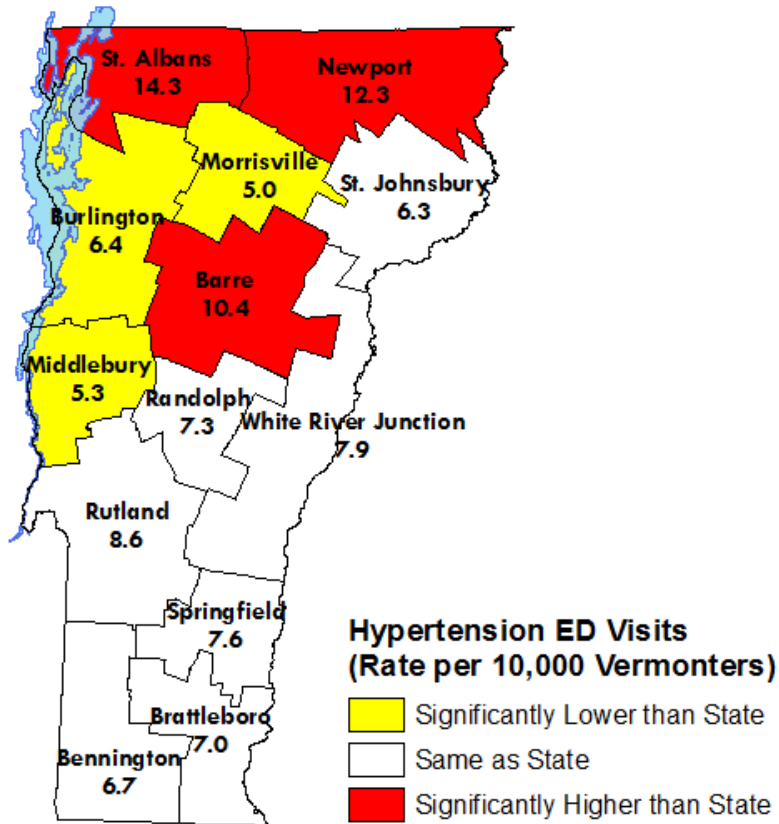
In 2011, there were 8.3 ED visits with a primary diagnosis of hypertension for every 10,000 Vermonters (603 ED visits). For every 10,000 Vermonters, 344.0 had any mention of hypertension during an ED Visit (25,354 ED visits), indicating hypertension is a common underlying factor for ED visits among Vermont residents. Primary diagnosis of hypertension, and any mention during an ED visit, decreased from 2010-2011. However, these differences were not statistically significant.

**ED Visits with a Diagnosis of Hypertension (rate per 10,000 Vermonters)^**

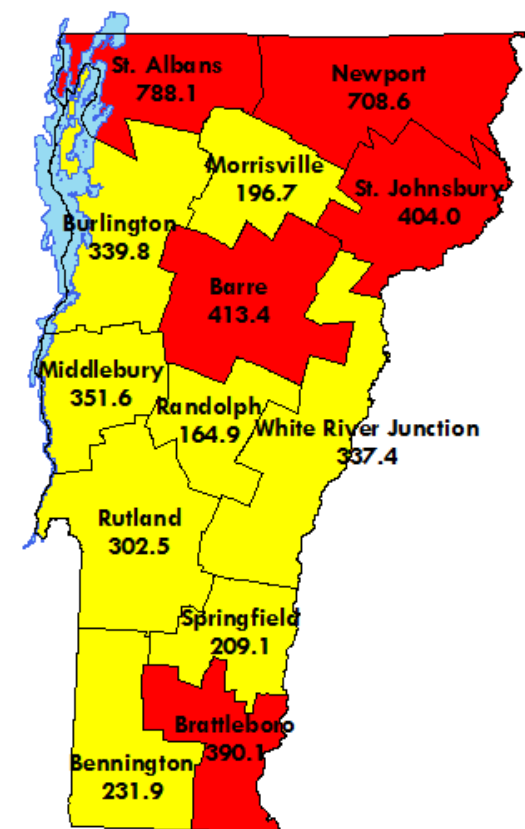


Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2005-2011.□

## Primary Diagnosis



## Any Mention



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2009-2011.<sup>10</sup>

## Hypertension-Related Emergency Department Visits by Hospital Service Area (HSA)<sup>†</sup>

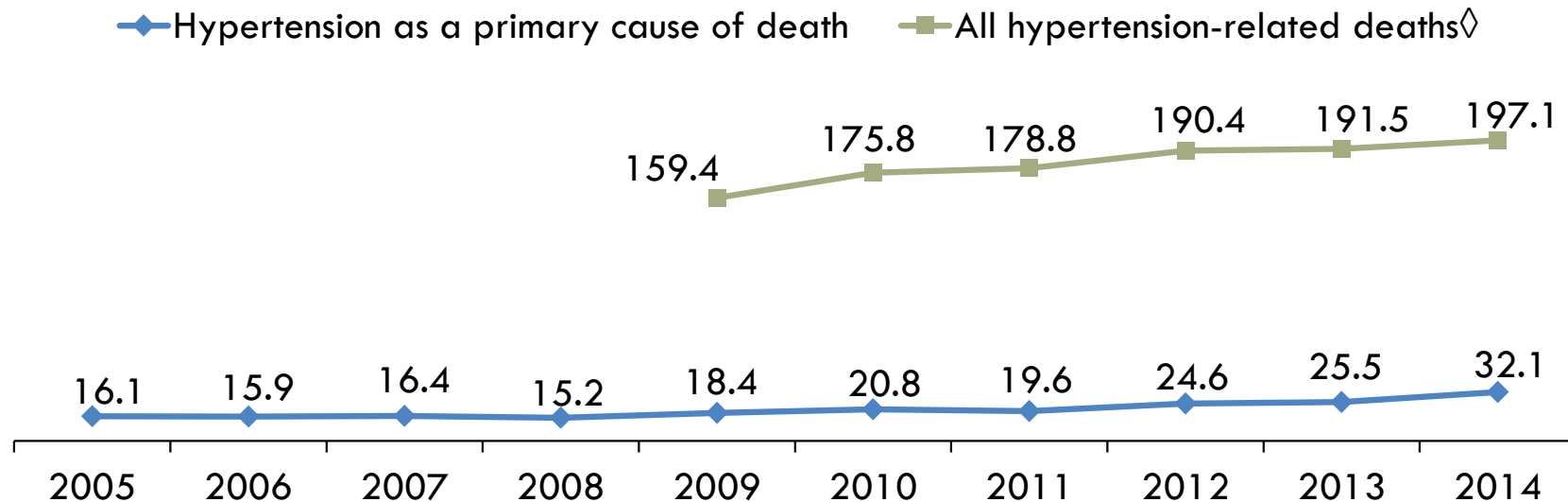
Regionally, St. Albans, Newport, and Barre HSAs had significantly higher rates of ED visits for primary diagnosis and any mention of hypertension during an ED visit while Burlington, Middlebury, and Morrisville were consistently lower than the state average. Brattleboro and St. Johnsbury were higher than the state for any mention of hypertension during an ED visit.



# Hypertension-Related Mortality†

Hypertension as a primary cause of death remains relatively low and has been rising since 2012 in Vermont compared to any mention of hypertension which is much higher. Any mention of hypertension increased 2009-2014 indicating hypertension as a contributing factor for mortality is increasing, potentially driving an increase in all hypertension-related deaths. In 2014 hypertension as a primary cause was 32.1 per hundred thousand Vermonters. All-hypertension-related deaths in 2014 accounted for 197.1 deaths per 100,000.

## Hypertension-Related Mortality (Rate per 100,000 Vermonters)

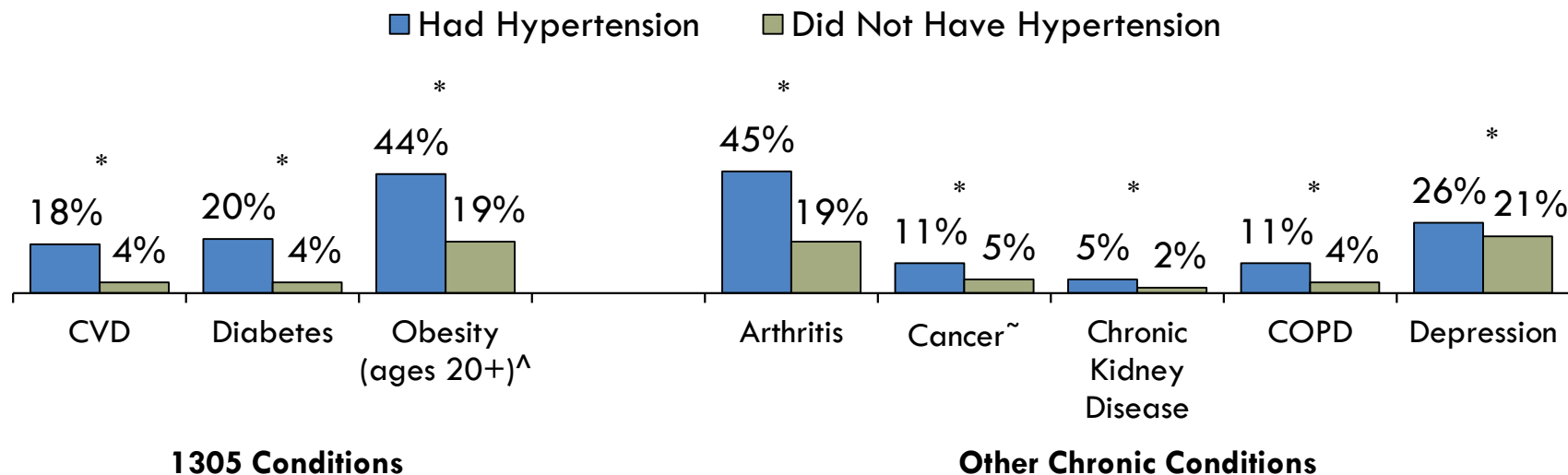


Source: Vermont Vital Statistics 2005-2014.

# Chronic Disease Comorbidities for Adults with Hypertension†

Close to half of Vermont adults who had hypertension were also obese (44%); less than half as many also had CVD (18%) or diabetes (20%). Close to half of all Vermont adults with hypertension also had arthritis (45%). Adults with hypertension were significantly more likely to have arthritis, cancer, COPD, chronic kidney disease, CVD, depression, diabetes, or be obese than adults who did not have hypertension. There was no significant difference in the prevalence of asthma (data not shown) between adults who had and did not have hypertension.

## Prevalence of Comorbid Chronic Diseases among Adults with Hypertension, 2015

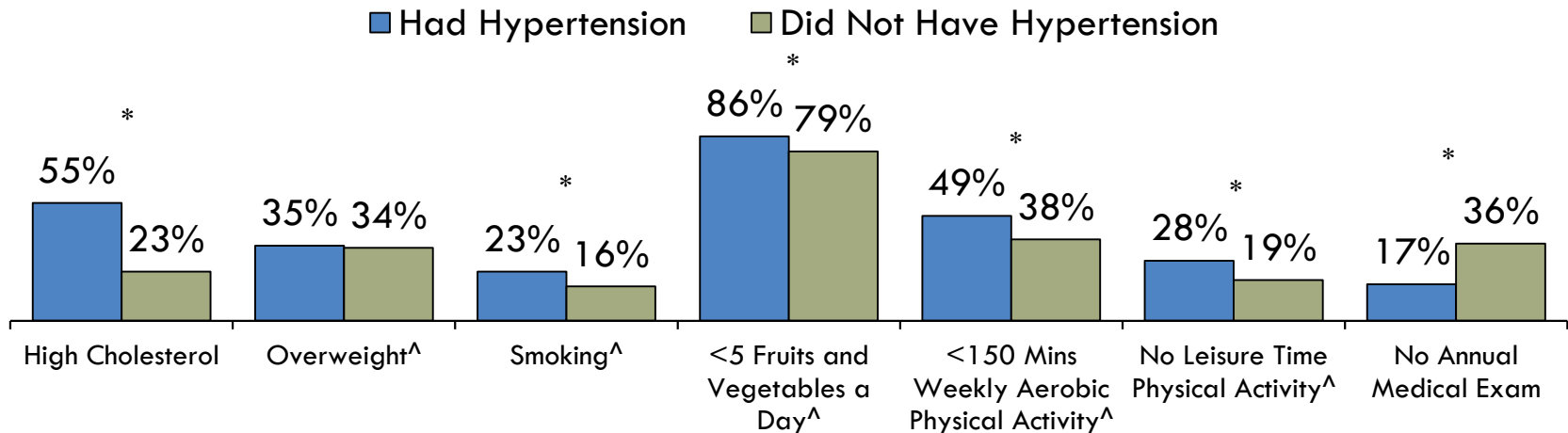


Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Adults with Hypertension and Other Chronic Disease Risk Factors†

Vermont adults with hypertension were significantly more likely to have high cholesterol, smoke, consume less than 5 fruits or vegetables a day, not meet weekly physical activity recommendations, or participate in no leisure time physical activity when compared to adults who did not have hypertension. Adults with hypertension were significantly less likely to not get an annual medical exam than adults who did not have hypertension.

## Chronic Disease Risk Factors among Adults with Hypertension, 2015



Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Antihypertensive Medication Adherence

Medication adherence is measured using “proportion of days covered” (PDC). PDC refers to proportion of days an insured person has filled a supply of medication in relation to the number of days they should be covered for, following their first prescription date during a year. In 2014, close to one in eight (78.4%) Vermont adults 18-64 who were continuously enrolled in a prescription drug benefit plan during the year were at least 80% adherent to their blood pressure medication regimen. Adherence rates were statistically similar between commercial and Medicaid claims from 2009 to 2014.

**Proportion of Insured Vermont Adults 18-64 With Hypertension Who Are At Least 80% Adherent with their Antihypertensive Medication Regimens**



2009

2010

2011

2012

2013

2014

Source: Vermont Healthcare Uniform Reporting and Evaluation System (VHCURES) 2009-2014.



# Obesity

# Obesity

- A body weight that is **excessively high** in relation to height is known as obesity.
- Obesity is a complex health issue resulting from several behavioral and genetic factors.
  - ▣ Behaviors such as dietary patterns, level of physical activity, and use of medications can increase the risk of obesity.
  - ▣ Contributing societal factors include the nutrition and physical activity environment, education and skills, and food marketing/promotion.
- Obesity is associated with poorer mental health outcomes, reduced quality of life, and numerous chronic health conditions that are the leading causes of death in the U.S. and worldwide including diabetes, heart disease, stroke, and some cancers.
- Obesity is a leading cause of preventable death in the U.S.

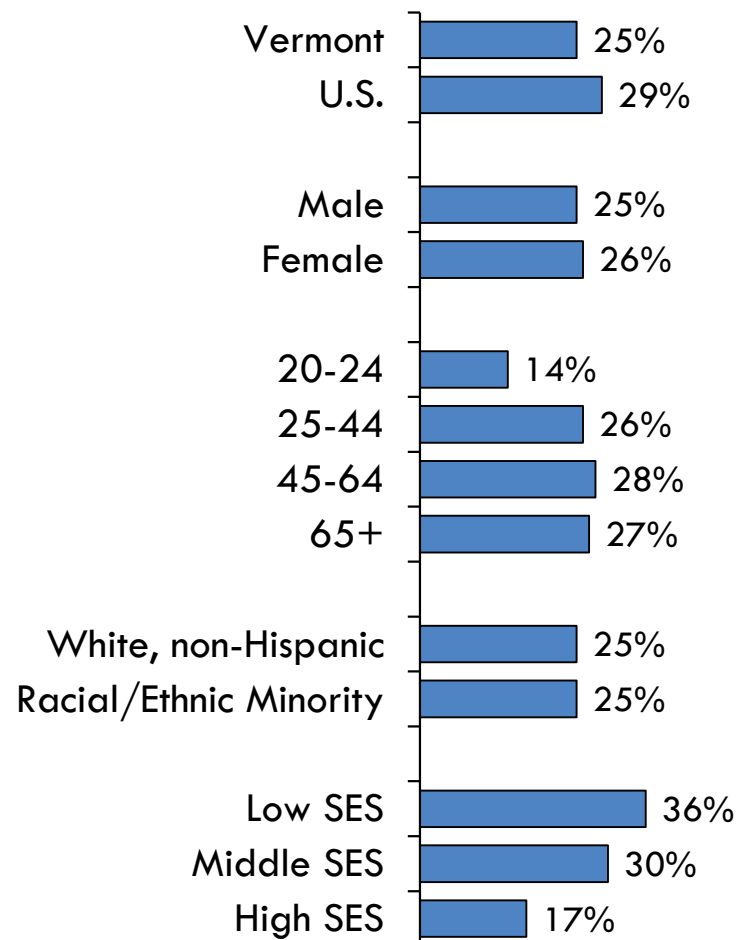
Source: Centers for Disease Control and Prevention, Overweight and Obesity, April 27, 2012.

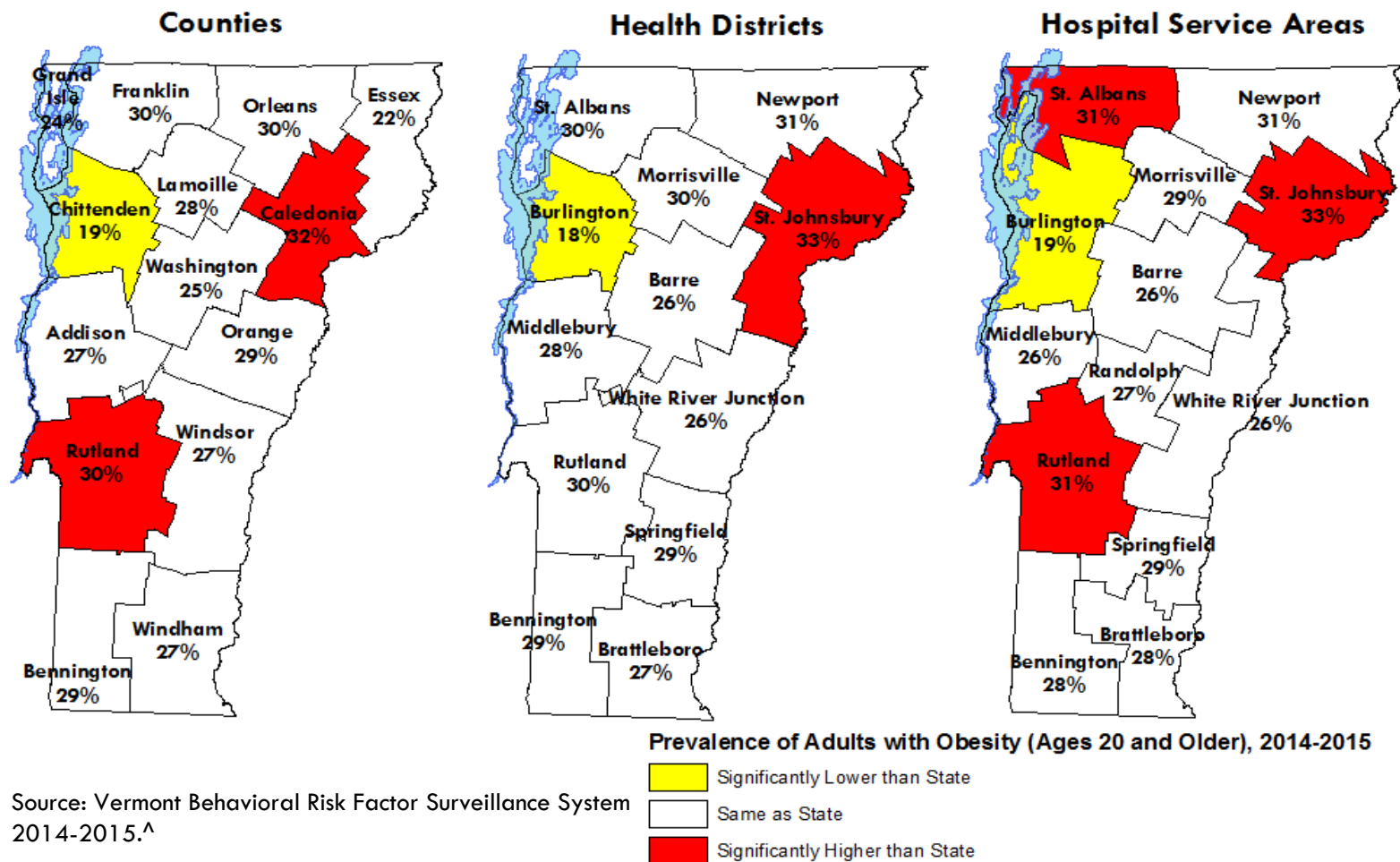
# Obesity among Adults 20 Years and Older†

- A quarter (25%) of Vermont adults (ages 20+) were obese in 2015 (or approximately 114,700 adults).
  - ▣ Vermont adults were significantly less likely to be obese than U.S. adults overall.
  - ▣ 20-24 year olds were significantly less likely to be obese than adults 25 and older.
  - ▣ The prevalence of obesity increases with decreasing socioeconomic status. Adults living at a low SES were more likely to be obese than those living at a high SES.

Source: Vermont Behavioral Risk Factor Surveillance System 2015

## Adults (ages 20+) Who Are Obese, 2015^





## Adult Prevalence of Obesity by Subgeography<sup>†</sup>

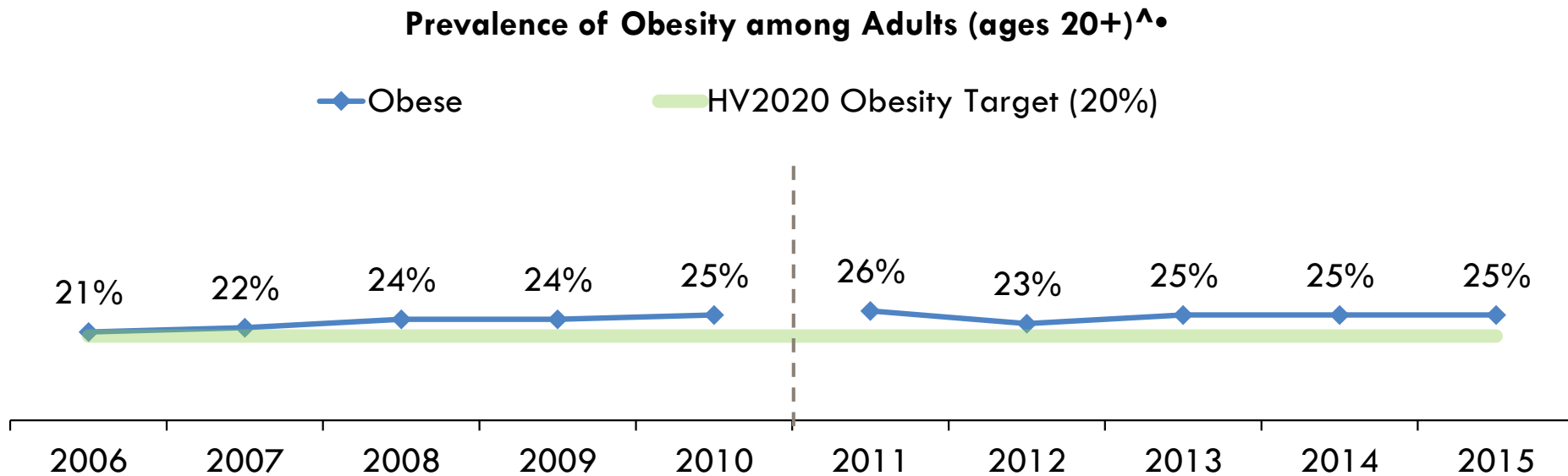
Regionally, areas near Rutland and Caledonia counties, as well as the St. Albans hospital service area (HSA) tended to have obesity rates higher than the average state prevalence of obesity among Vermont adults ages 20+ (25%).



# Adult Prevalence of Obesity†



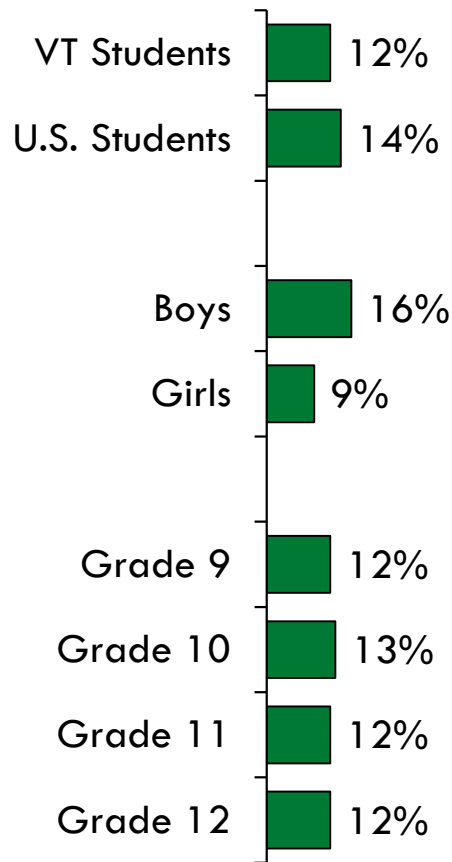
The prevalence of obesity among Vermont adults ages 20 and older has not changed significantly from 2006 through 2015. The rate of obesity remains above the HV2020 target of 20%.



Source: Vermont Behavioral Risk Factor Surveillance System 2006-2015.

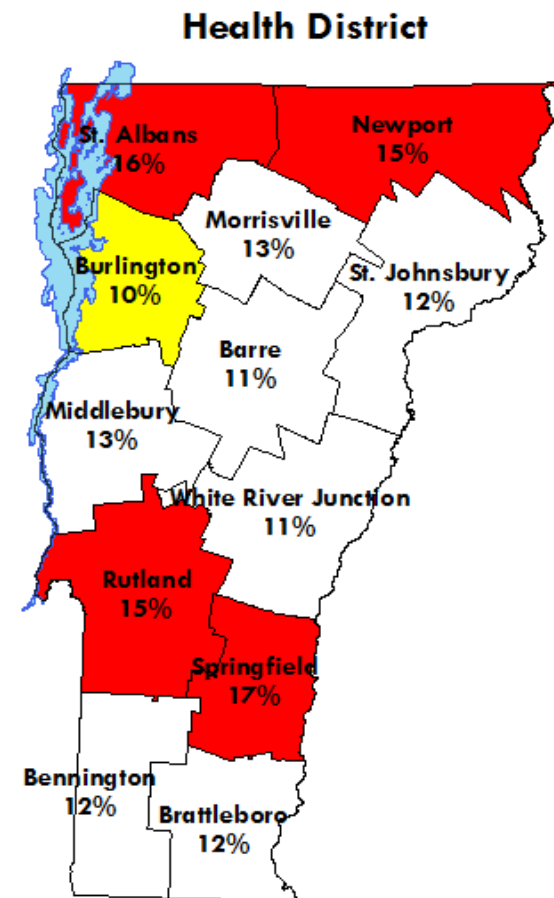
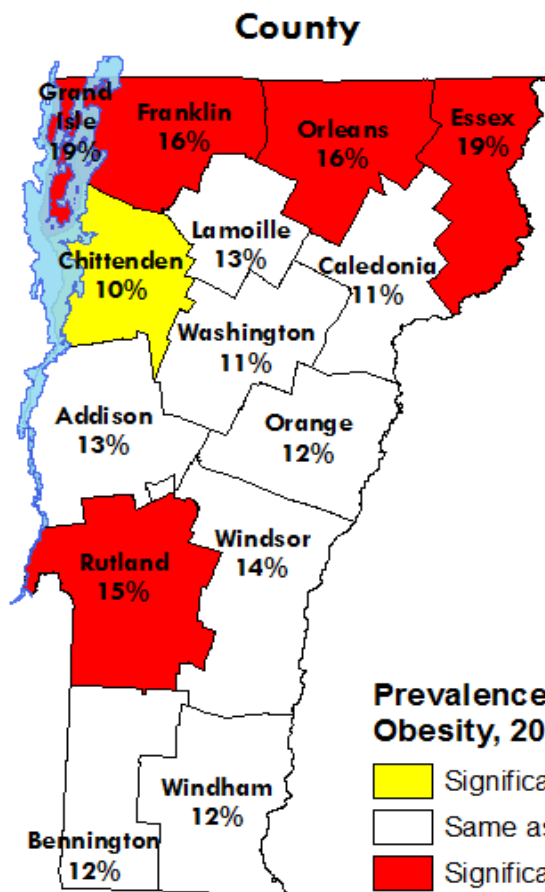
# Obesity Among Youth Grades 9-12<sup>†</sup>

## Prevalence of Obese Youth Grades 9-12, 2015<sup>§</sup>



- In 2015, one in eight (12%) Vermont youth grades 9-12 were obese (or approximately 2,900 students).
- ▣ Vermont youth and U.S. youth (grades 9-12) were similar in their likelihood to be obese.
- ▣ Boys were significantly more likely than girls to be obese.
- ▣ Prevalence of obesity among Vermont youth did not vary by grade.

Source: the 2015 Vermont Youth Risk Behavior Survey.



Source: the 2015 Vermont Youth Risk Behavior Survey.

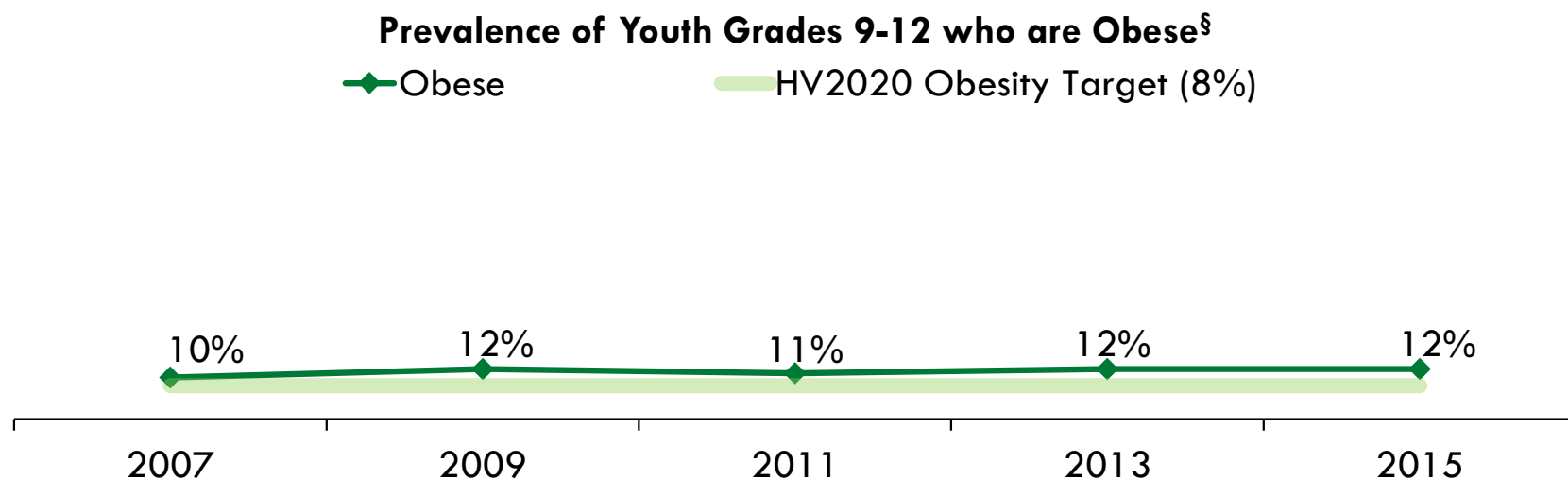
## Youth (Grades 9-12) Prevalence of Obesity by Subgeography

Regionally, northern Vermont youth (grades 9-12) had significantly higher rates of obesity when compared to the state average. Additionally Rutland county and the Rutland and Springfield health districts were higher than the state average.

# Prevalence of Obesity among Youth Grades 9-12<sup>†</sup>



The prevalence of obesity among Vermont youth grades 9-12 has not changed significantly from 2007 to 2015. The prevalence of obesity among Vermont youth remains above the Healthy Vermonters 2020 target of 8%.

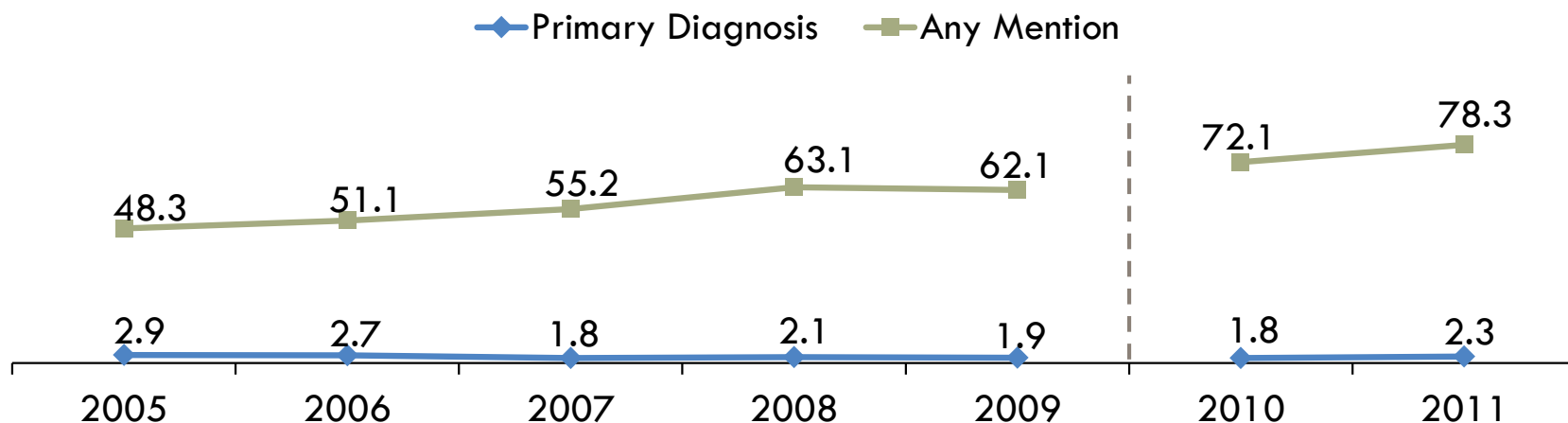


Source: the Vermont Youth Risk Behavior Survey 2007-2015.

# Obesity-Related Hospital Discharges<sup>†</sup>

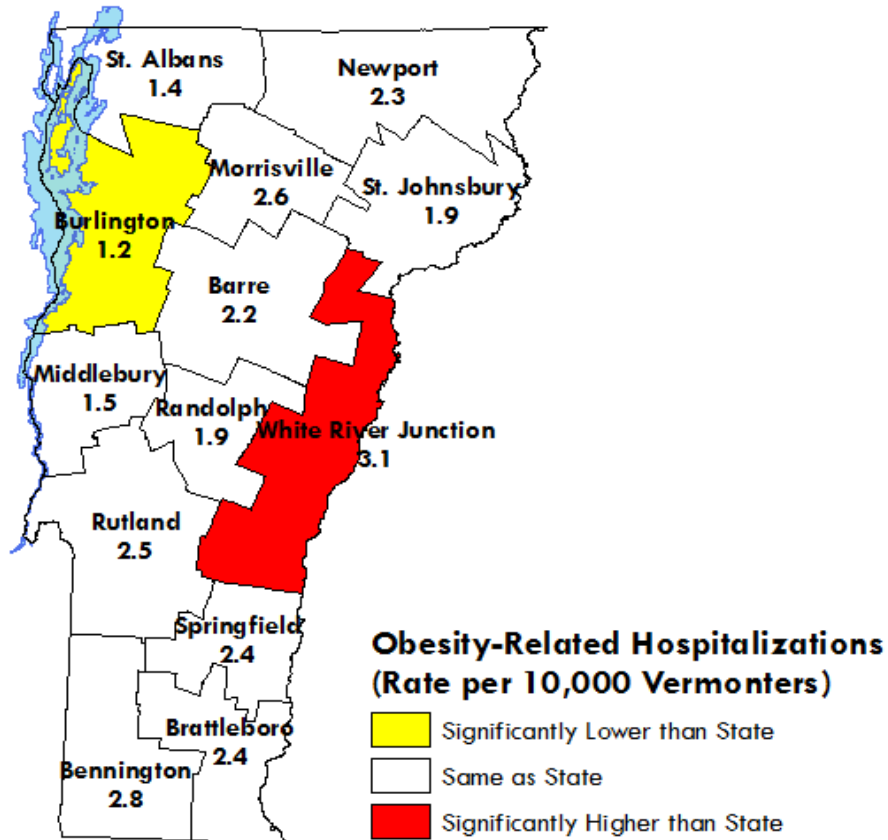
In 2011, there were 2.3 hospital discharges with a primary diagnosis of obesity for every 10,000 Vermonters (149 discharges). The trend for obesity as a primary cause of hospitalization remained stable from 2010 to 2011. Any mention of obesity as a factor for hospitalization occurred in 78.3 hospital discharges for every 10,000 Vermonters (5,705 discharges). This is significantly higher than in 2010.

## Hospital Discharges with an Obesity Diagnosis (per 10,000 Vermonters)<sup>^</sup>

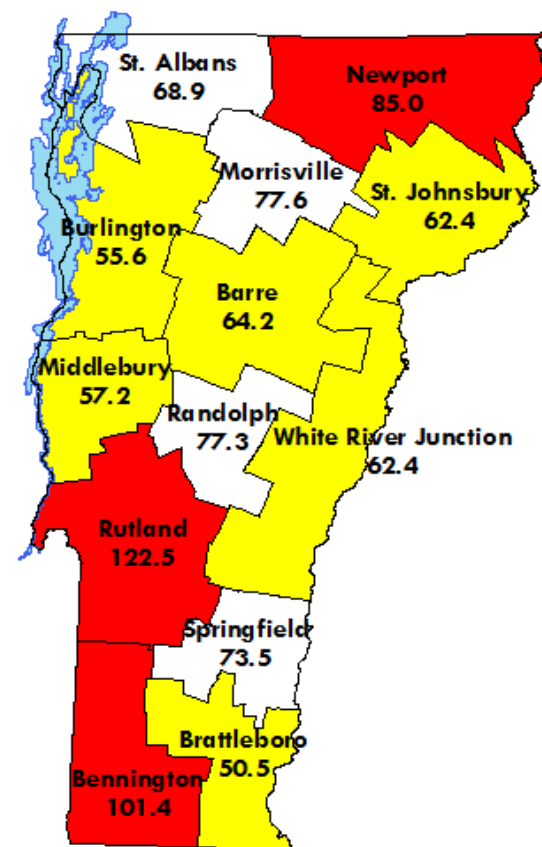


Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2005-2011.<sup>a</sup>

## Primary Diagnosis



## Any Mention



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2009-2011.<sup>1a</sup>

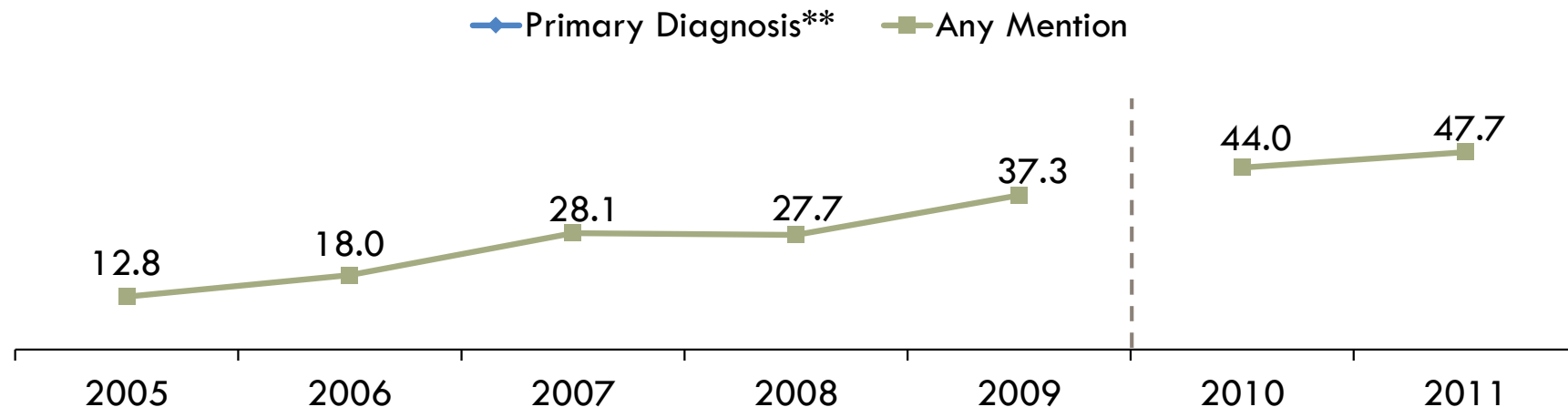
# Obesity-Related Hospital Discharges by Hospital Service Area (HSA)<sup>†</sup>

The White River Junction hospital service area (HSA) had a significantly higher rate of obesity as a primary diagnosis for hospitalization. Any mention of obesity was significantly higher in the Newport, Rutland, and Bennington HSAs when compared to the state average. White River Junction was significantly lower than the state average for any mention.

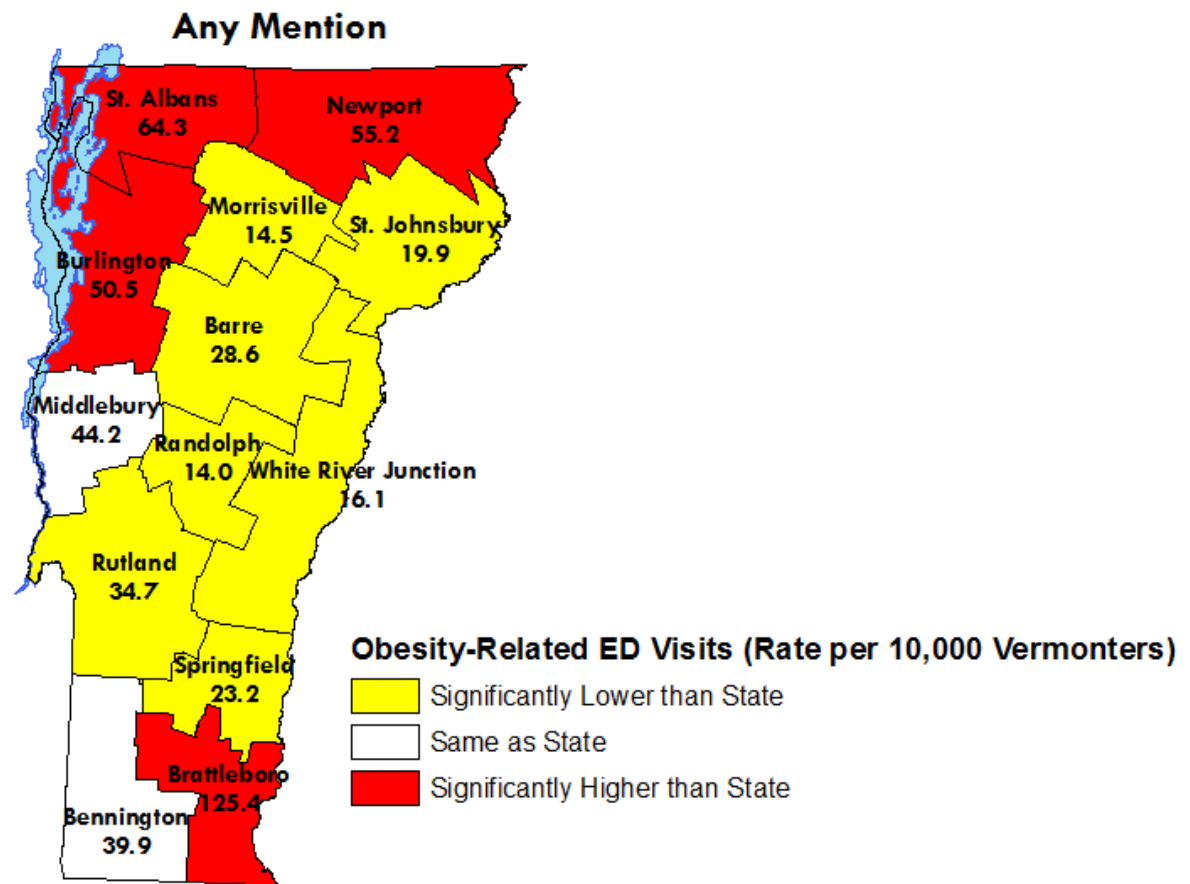
# Obesity-Related Emergency Department Visits<sup>†</sup>

In 2011, 47.7 out of every 10,000 Vermont residents visited an ED with a health condition where obesity was mentioned (3,084 ED visits). ED visits with any mention of obesity have risen steadily from 2005 to 2011, with a statistically significant increase from 2010 to 2011. Obesity was very rarely diagnosed as a primary cause for ED visits and total number of visits did not meet the reporting threshold.

## ED Visits with Any Mention of Obesity (Rate per 10,000 Vermonters)<sup>^</sup>



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS) 2005-2011.<sup>□</sup>



Source: Vermont Uniform Hospital Discharge Data Set (VUHDDS), 2009-2011.<sup>1a</sup>

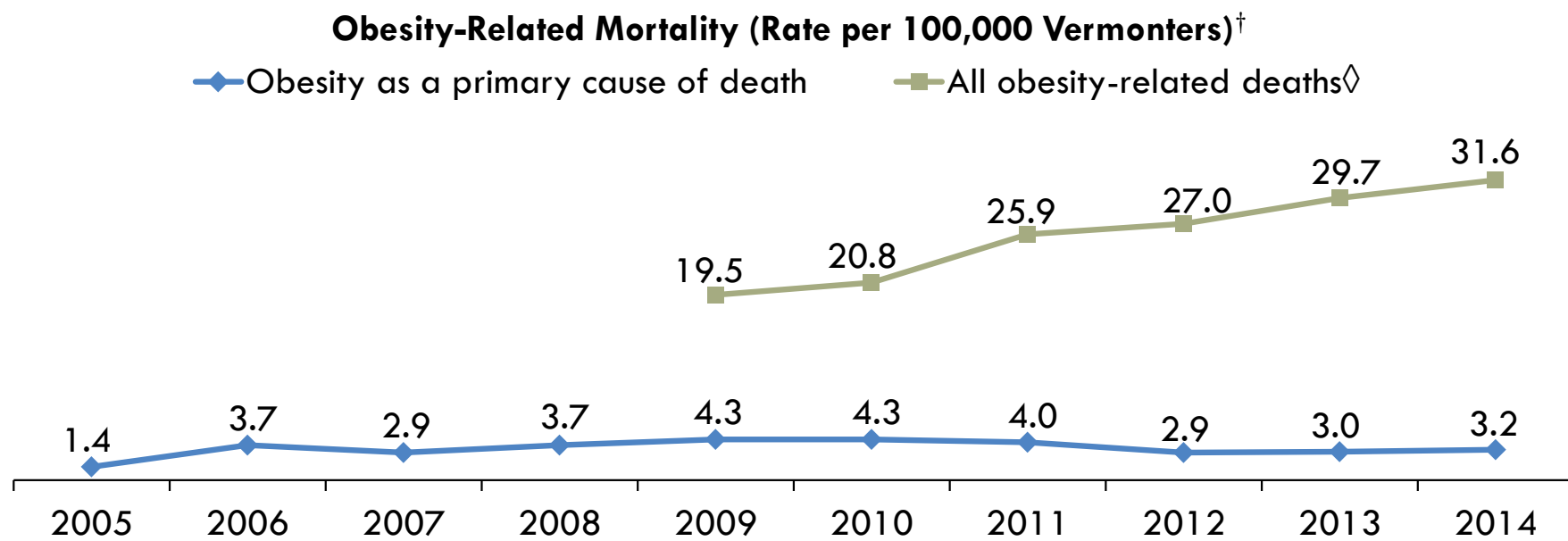
## Obesity-Related Emergency Department Visits by Hospital Service Area (HSA)<sup>†</sup>

Obesity as a primary diagnosis for ED visits was too small to be reported. However, rates for any mention of obesity were significantly higher in the Newport, St. Albans, Burlington, and Brattleboro Hospital Service Areas (HSAs). The rate for the Brattleboro HSA was more than two times the statewide rate (47.7 per 10,000 Vermonters).



# Obesity-Related Mortality

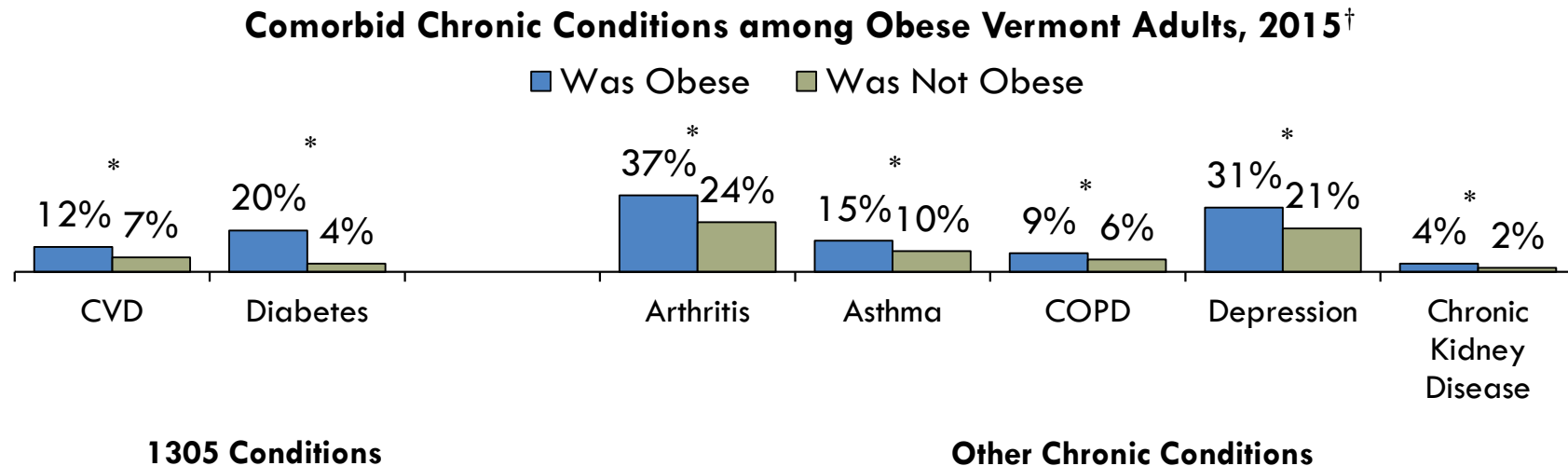
Obesity as a primary cause of death was low and stable from 2005 to 2014 compared to all obesity-related deaths which are significantly higher. Conversely, all obesity-related deaths rose significantly from 2009 through 2014 indicating that obesity as a contributing factor of death is increasing, potentially driving an increase in all obesity-related deaths.



Source: Vermont Vital Statistics 2005-2014.

# Obese Adults and Chronic Disease

One in five Vermont adults who was obese also had diabetes (20%) and one in eight (12%) also had cardiovascular disease (CVD). Over a third (37%) of obese Vermont adults also had arthritis. Obese Vermont adults were significantly more likely to have CVD, diabetes, arthritis, asthma, COPD, a depressive disorder, or chronic kidney disease than those who were not obese. There was no significant difference in the prevalence of cancer (data not shown) between adults who were and were not obese.

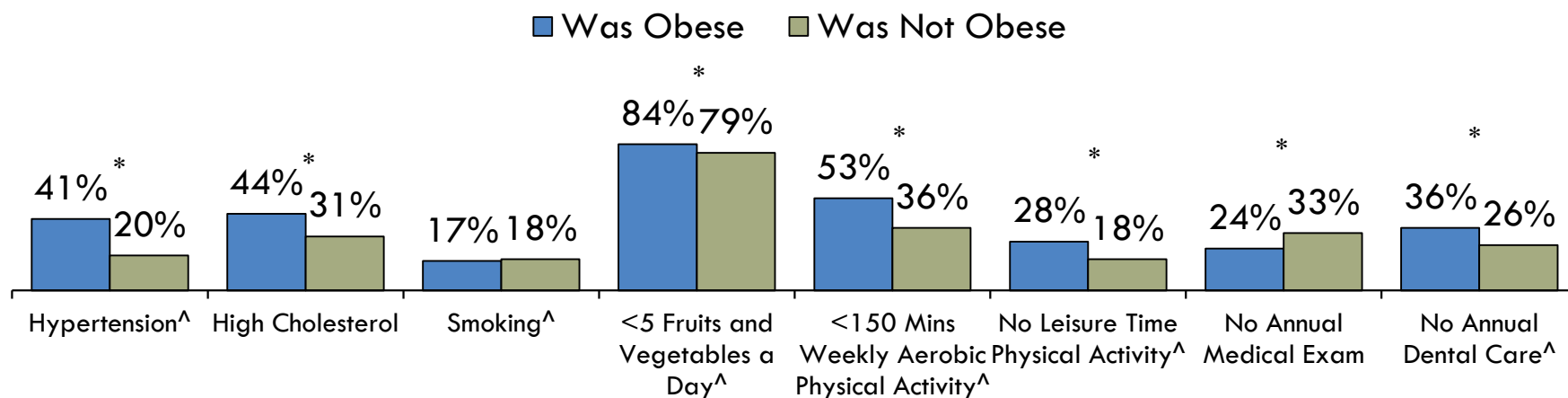


Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Risk Factors for Chronic Disease among Obese Adults

Vermont adults who were obese were significantly more likely to have hypertension, high cholesterol, consume less than 5 fruits or vegetables a day, participate in less than 150 minutes of physical activity a week, participate in no leisure time physical activity, and not receive dental care compared to adults who were not obese. Vermont adults who were obese were significantly less likely to not receive an annual medical exam when compared to adults who were not obese.

## Prevalence of Chronic Disease Risk Factors among Obese Vermont Adults<sup>†</sup>



Source: Vermont Behavioral Risk Factor Surveillance System 2015 (hypertension, cholesterol, nutrition, physical activity, smoking, medical exam) and 2014 (dental care).



# Overweight

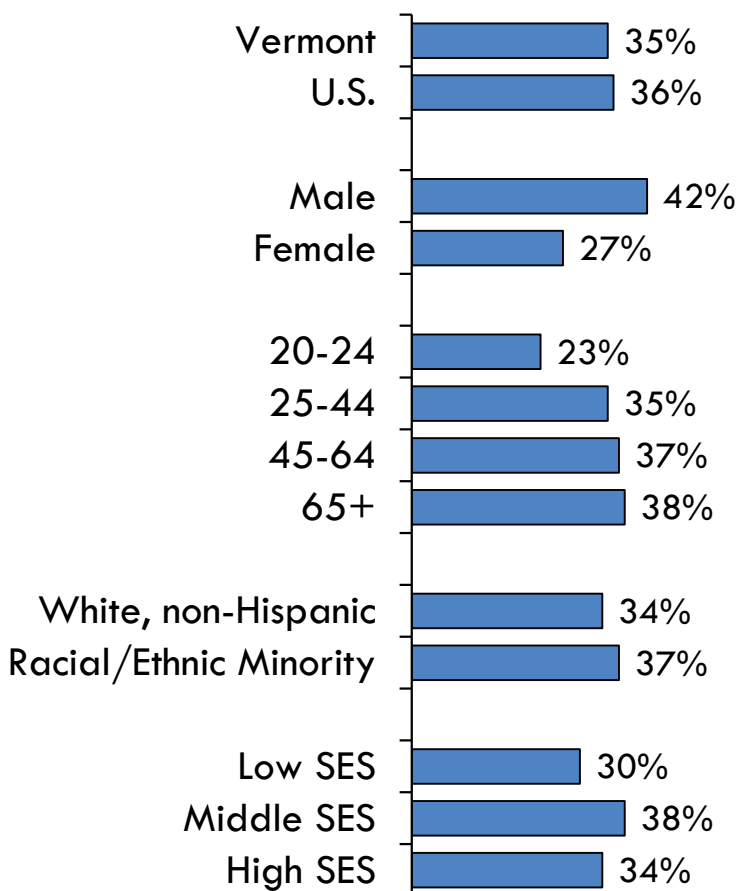
# Overweight

- A weight that is higher than what is considered healthy for a given height is described as overweight.
- Excess weight gain leading to overweight is a complex health issue resulting from several behavioral and genetic factors.
  - ▣ Behaviors can include dietary patterns, level of physical activity, and use of medications.
  - ▣ Contributing societal factors include food and physical activity environment, education and skills, and food marketing/promotion.
- Being overweight leads to a greater risk of obesity and is associated with numerous chronic health conditions and poorer health outcomes.

Source: Centers for Disease Control and Prevention, Overweight and Obesity, April 27, 2012.

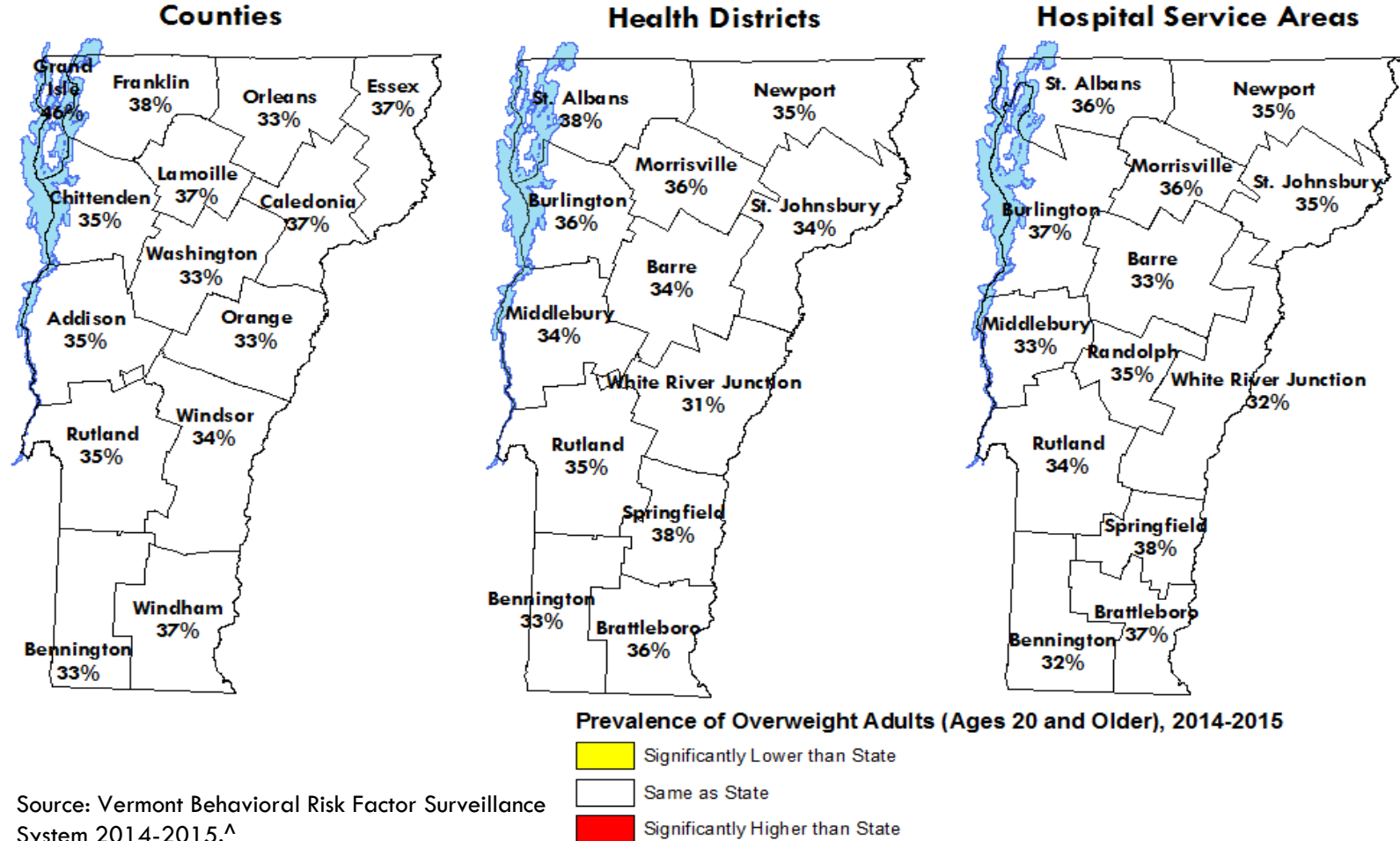
# Prevalence of Overweight Adults (ages 20+)†

## Prevalence of Overweight Adults (Ages 20+), 2015^



- In 2015, over a third (35%) of Vermont adults (20 and older) were overweight (or approximately 158,400 adults).
- The prevalence of overweight among Vermont adults was similar to that of U.S. adults overall.
- Men were significantly more likely to be overweight than women.
- Vermont adults 20-24 were significantly less likely to be overweight than those 25 and older.
- Adults living at a low SES were less likely to be overweight than those living at a middle SES.

Source: Vermont Behavioral Risk Factor Surveillance System 2015.



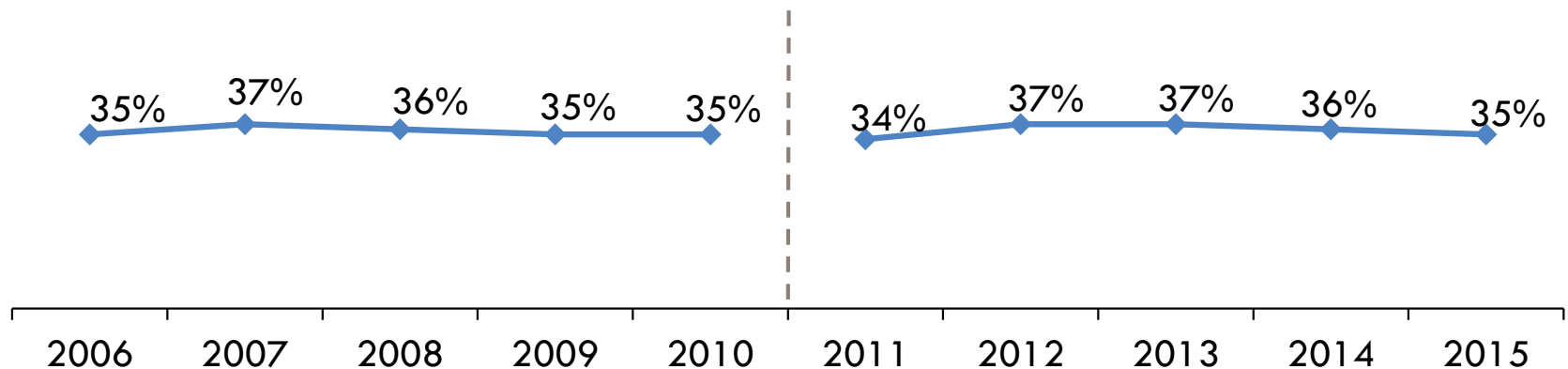
## Adult Overweight Prevalence by Subgeography<sup>†</sup>

The prevalence of overweight adults was similar across all state regions when compared to the state average, indicating that the chronic disease risk factor of overweight is of equal concern throughout all regions of the state.

# Adult Prevalence of Overweight†

The prevalence of overweight Vermont adults was 35% in 2015 and has remained stable from 2006-2015. The prevalence of overweight among Vermont adults was significantly higher than the prevalence of obesity (35% vs. 25%). Being overweight increases the risk of obesity; over a third of Vermont adults 20 and older are at risk of becoming obese.

## Prevalence of Adults (ages 20+) who are Overweight^•



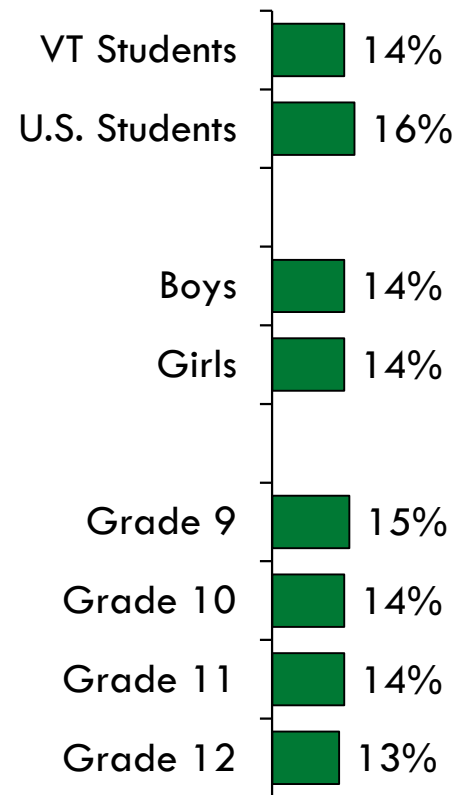
Source: Vermont Behavioral Risk Factor Surveillance System 2006-2015.



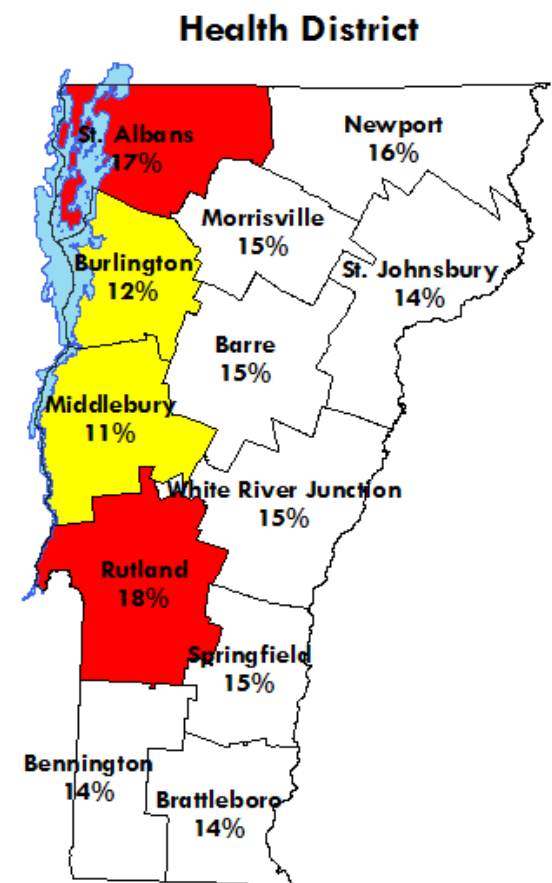
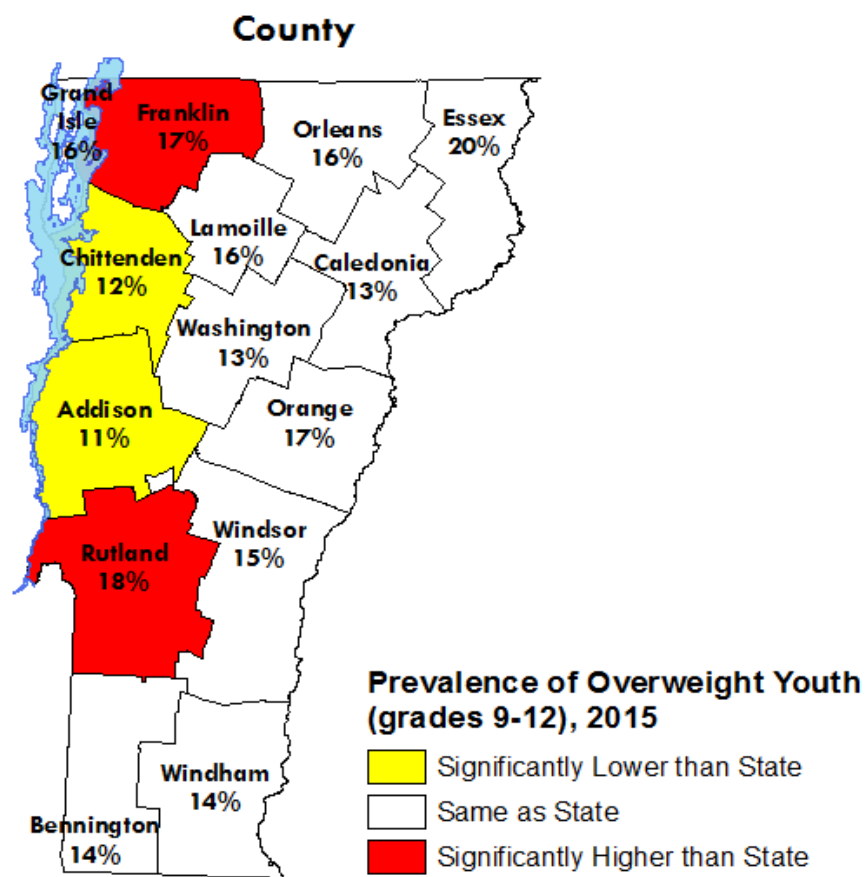
# Prevalence of Overweight Youth Grades 9-12†

- In 2015, one in seven (14%) Vermont youth grades 9-12 were overweight (or approximately 3,300 students).
- ▣ Vermont youth were significantly less likely to be overweight than U.S. youth (grades 9-12).
- ▣ Boys and girls were equally likely to be overweight.
- ▣ The prevalence of overweight did not vary by grade.

**Prevalence of Overweight Youth  
Grades 9-12, 2015§**



Source: the 2015 Vermont Youth Risk Behavior Survey.



Source: the 2015 Vermont Youth Risk Behavior Survey.

## Youth (Grades 9-12) Overweight Prevalence by Subgeography

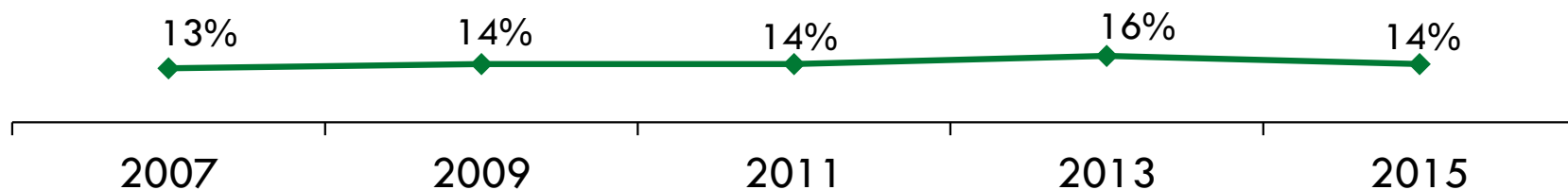
Franklin and Rutland counties as well as the St. Albans and Rutland Health Districts showed a significantly higher prevalence of overweight youth (grades 9-12) when compared to the state average (14%).

# Prevalence of Overweight Youth Grades 9-12†



The prevalence of overweight among Vermont youth decreased significantly from 2013 to 2015 but was similar to previous years. Since 2011 the prevalence of overweight youth has been significantly higher than the prevalence of obese youth (14%-16% vs. 11%-12%). As overweight is a risk factor for obesity, approximately 14% of Vermont youth are at risk of becoming obese.

## Prevalence of Overweight Youth Grades 9-12§

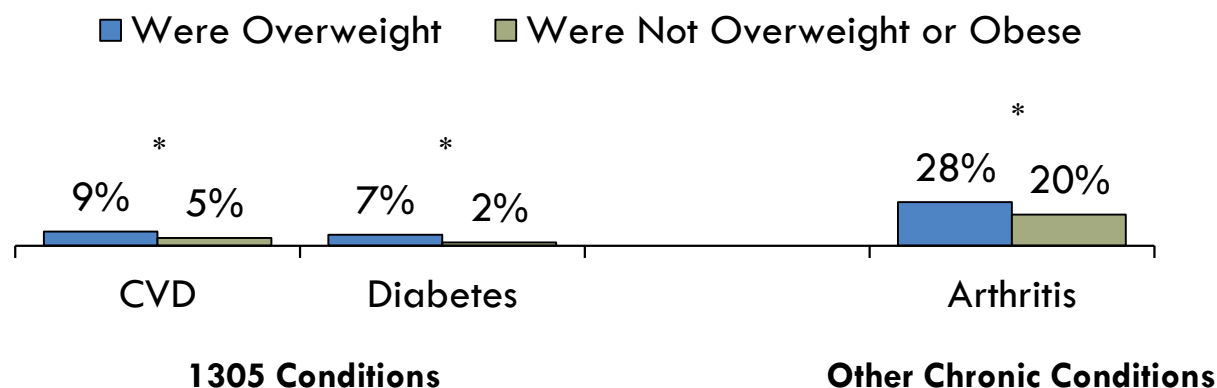


Source: the Vermont Youth Risk Behavior Survey 2007-2015.

# Overweight Adults and Chronic Disease

Nine percent of Vermont adults who were overweight also had cardiovascular disease (CVD) and seven percent also had diabetes. Close to one in three Vermont adults who were overweight also had arthritis (28%). Overweight adult Vermonters were significantly more likely to have CVD, diabetes, and arthritis than adults who were not overweight or obese. There was no significant differences in the prevalence of chronic kidney disease, chronic obstructive pulmonary disease (COPD), asthma, or depression between adults who were overweight and those who were not overweight or obese (data not shown).

## Comorbid Chronic Conditions among Overweight Adult Vermonters, 2015<sup>†</sup>

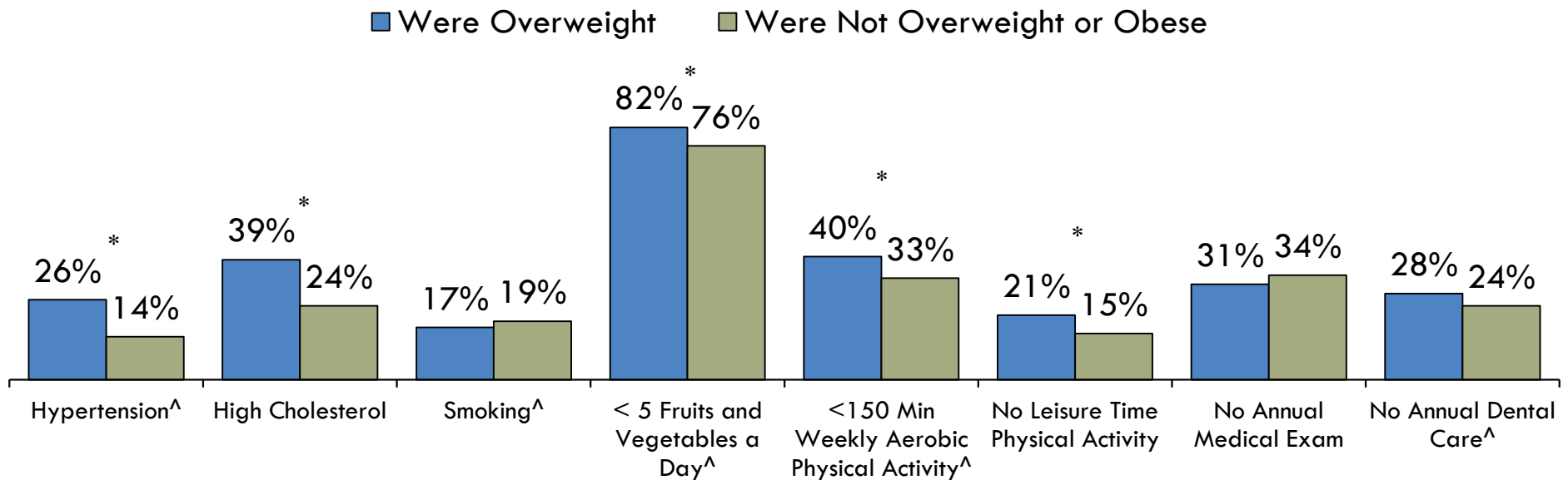


Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Overweight Adults and Risk Factors for Chronic Disease

Vermont adults who were overweight were significantly more likely to have hypertension, high cholesterol, consume less than 5 fruits or vegetables a day, participate in less than 150 minutes of aerobic physical activity a week, and have no leisure time physical activity than adults who were not overweight or obese.

**Prevalence of Chronic Disease Risk Factors among Overweight Vermont Adults<sup>†</sup>**



Source: Vermont Behavioral Risk Factor Surveillance System 2015 (physical activity, nutrition, hypertension, cholesterol, smoking, medical exam) and 2014 (dental care).



# Physical Activity

# CDC Guidelines for Physical Activity

## □ Recommendations for **Adults**<sup>1</sup>

- ▣ Average of 150 minutes of moderate intensity aerobic physical activity each week or 75 minutes of vigorous activity.
- ▣ Muscle strengthening exercises at least twice a week.

## □ Recommendations for **Children and Teens**<sup>1</sup>

- ▣ Each day's total activity should add up to 60 minutes.
- ▣ Participate in vigorous activity at least 3 times a week.
- ▣ Engage in at least 3 days of muscle and bone-strengthening exercises.

## □ Limit Screen Time<sup>2</sup>

- ▣ No more than 2 hours a day for youth over the age of 2 years.

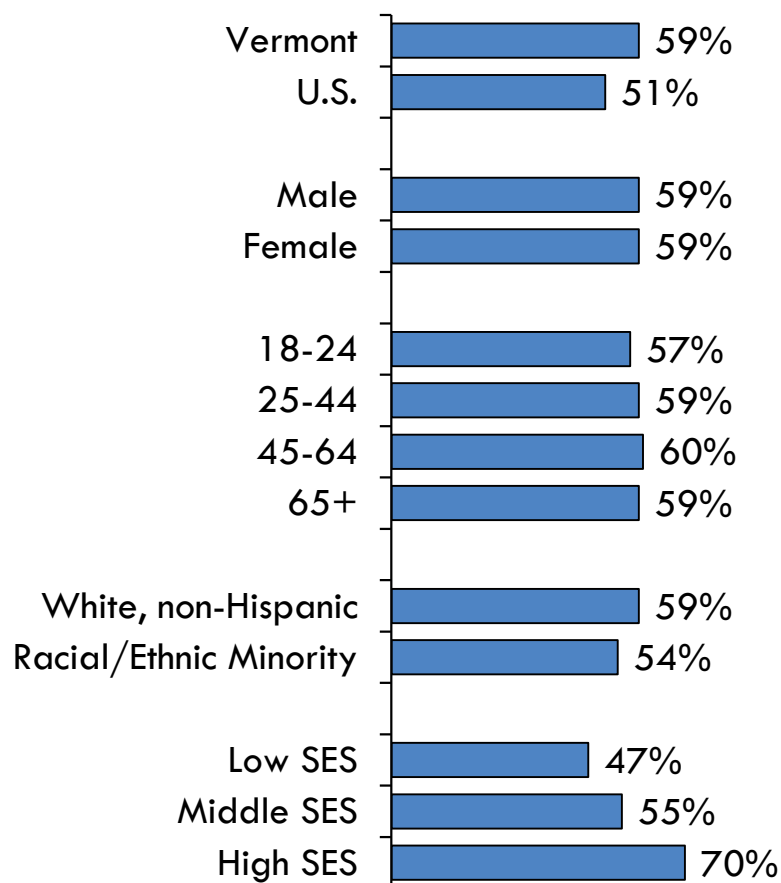
Source: <sup>1</sup>U.S. Department of Health & Human Services Office of Disease Prevention and Health Promotion

<sup>2</sup>American Academy of Pediatrics. Children, adolescents, and television. *Pediatrics*. 2001; 107(2):423-426.

# Adults Meeting CDC's Weekly Aerobic Physical Activity Guidelines†



## Adults Meeting Weekly CDC Aerobic Physical Activity Guidelines, 2015^

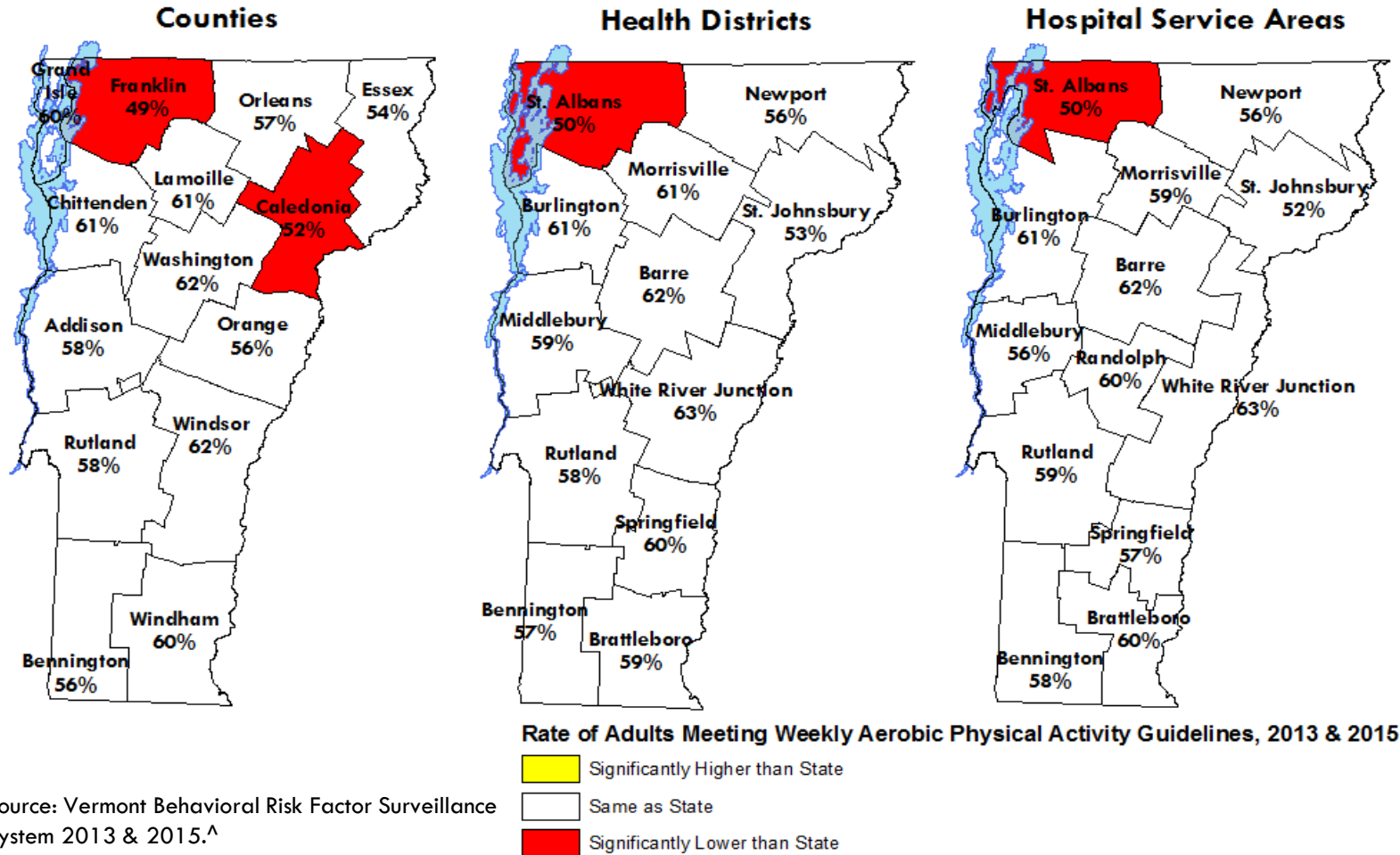


□ Close to six in ten Vermont adults (59%) met aerobic physical activity guidelines in 2015 (or approximately 263,200 adults).

- ▣ Vermont adults were significantly more likely to meet aerobic physical activity guidelines than the U.S. adults overall.
- ▣ Meeting aerobic physical activity guidelines increases with increasing socioeconomic status (SES).

Source: Vermont Behavioral Risk Factor Surveillance System 2015.





## Adults Meeting Weekly Aerobic Physical Activity Guidelines by Subgeography†

Regionally, Franklin and Caledonia Counties were significantly lower than the state average for adults meeting CDC's weekly aerobic physical activity guidelines. The St. Albans Health District and Hospital Service Area (HSA) were also lower than the state average.

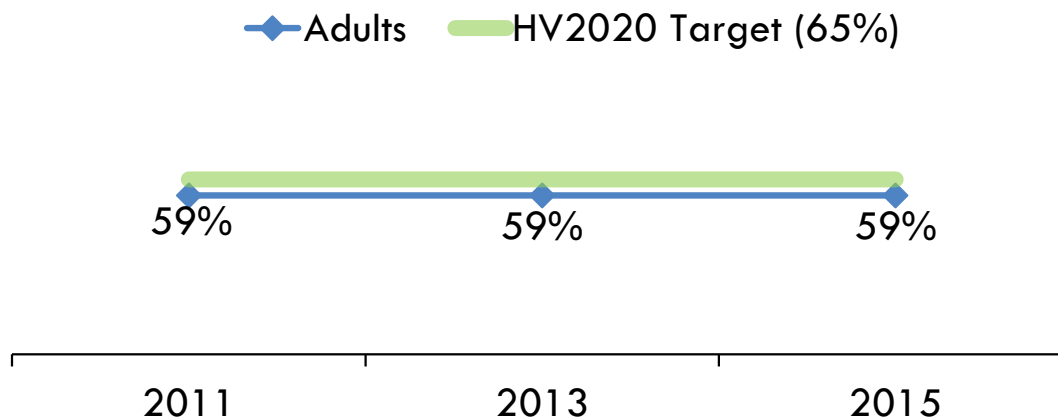
# Adults Meeting CDC's Weekly Aerobic Physical Activity Guidelines†



Adult Vermonters meeting weekly aerobic physical activity guidelines remains similar to previous years. Prevalence remains below the Healthy Vermonters 2020 target of 65%.

More than two in ten (21%) Vermont adults in 2015 did not participate in any leisure time physical activity, similar to previous years.

## Adults Who Met CDC's Weekly Aerobic Physical Activity Recommendations, 2011-2015<sup>^</sup>

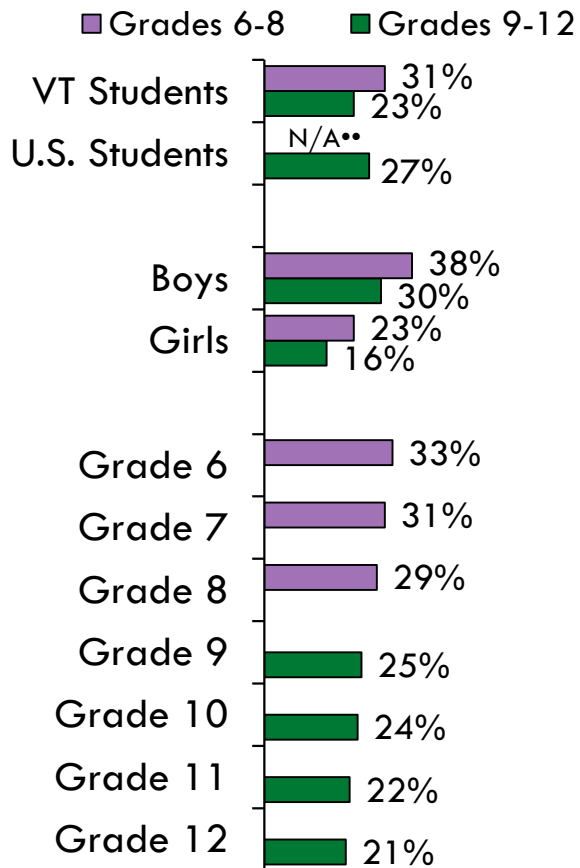


Source: Vermont Behavioral Risk Factor Surveillance System 2011-2015.

# Youth Meeting CDC's Daily Aerobic Physical Activity Guidelines

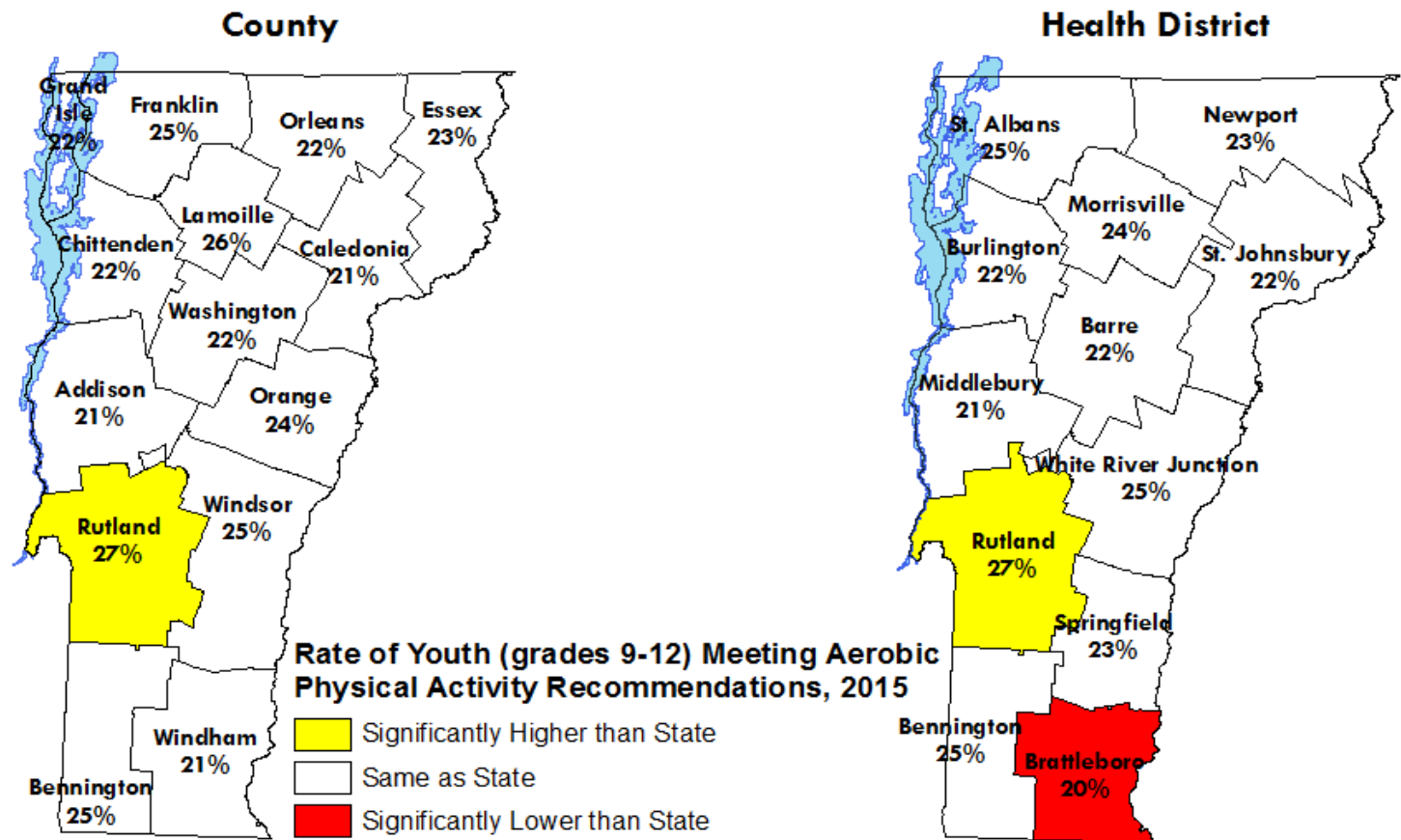


## Youth Grades 6-12 Engaging in 60+ Minutes of Physical Activity a Day, 2015†



Source: the 2015 Vermont Youth Risk Behavior Survey.

- In 2015, about a third of youth grades 6-8 (31%) and a quarter of youth grades 9-12 (23%) participated in at least 60 minutes of daily physical activity (or approximately 5,000 and 6,100 students, respectively).
- ▣ Youth in grades 9-12 were significantly less likely to participate in 60+ minutes of physical activity a day than U.S. youth in grades 9-12 (27%).
- ▣ Youth in grades 6-8 were significantly more likely than those in grades 9-12 to meet physical activity recommendations.
- ▣ Girls were significantly less likely to participate in 60+ minutes of daily physical activity than boys.
- ▣ Participation in at least 60 minutes of physical activity decreased as grade in school increases.



Source: the 2015 Vermont Youth Risk Behavior Survey.

## Youth (Grades 9-12) Who Met Daily Aerobic Physical Activity Guidelines by Subgeography

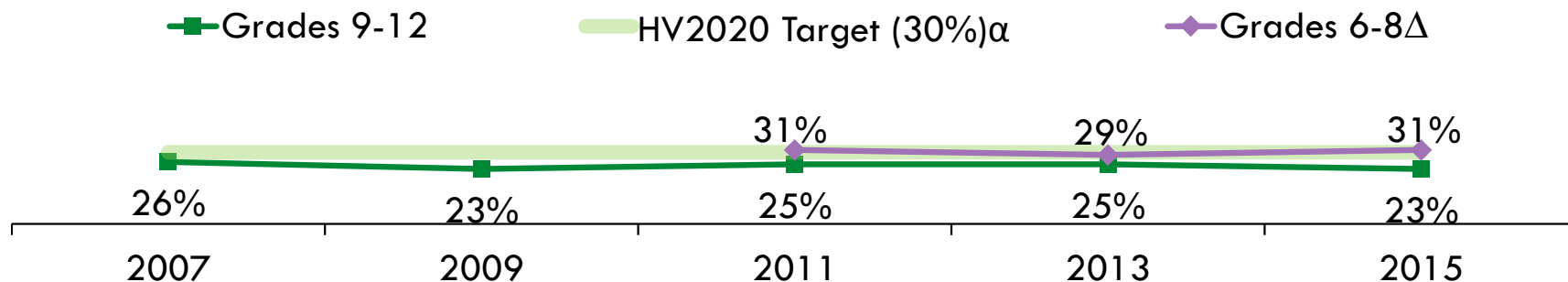
Rutland County and the Rutland Health District were significantly higher for youth (grades 9-12) meeting CDC's daily aerobic physical activity recommendations. The Brattleboro Health District was significantly lower than the state average.

# Youth Meeting Aerobic Physical Activity Guidelines†



The prevalence of middle school students participating in at least 60 minutes of aerobic physical activity a day significantly increased from 2013 to 2015; while for high school students it significantly decreased. The proportion of high school students participating in at least 60 minutes of aerobic physical activity a day remains below the HV2020 target of 30%. Of all students in 2015, 14% of high schoolers and 8% of middle schoolers reported no days of physical activity.

**Rate of Youth, Grades 6-12, Participating in at least 60 Minutes of Physical Activity a Day**

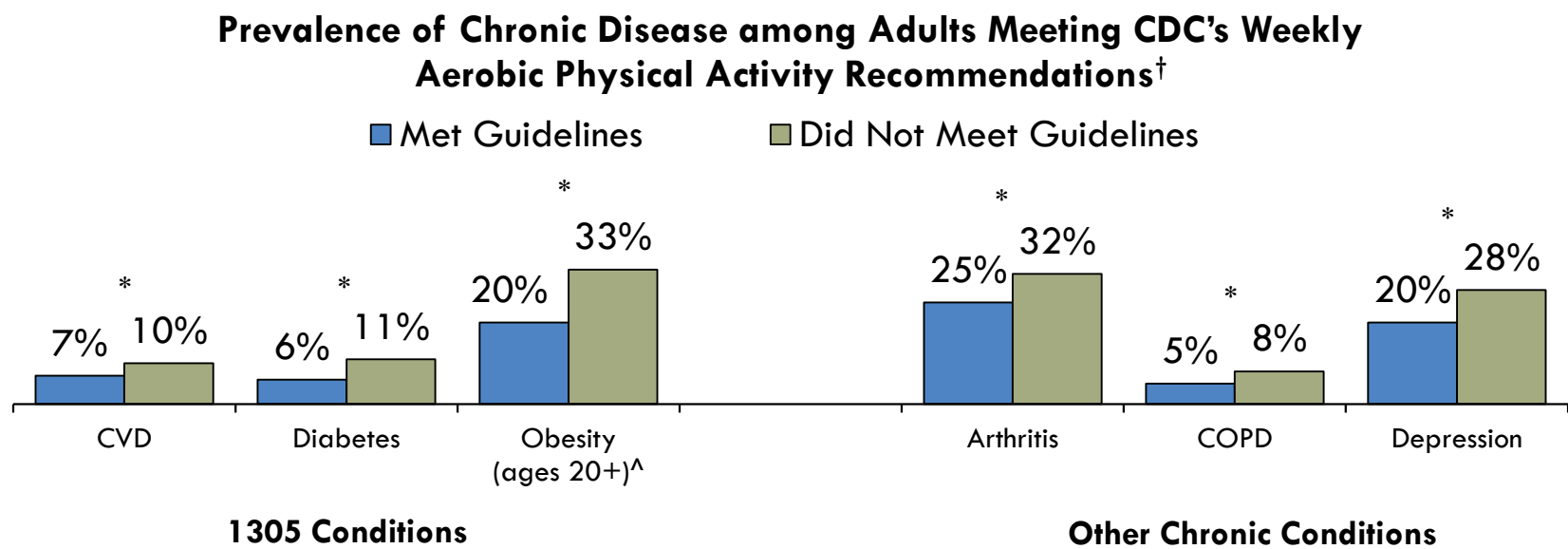


Source: the Vermont Youth Risk Behavior Survey, 2007-2015.

# Prevalence of Chronic Diseases among Adults who Met CDC's Weekly Physical Activity Recommendations

Adult Vermonters who met CDC's weekly aerobic physical activity recommendations were significantly less likely to be obese, have CVD, diabetes, arthritis, COPD or a depressive disorder when compared to Vermont adults who did not meet them.

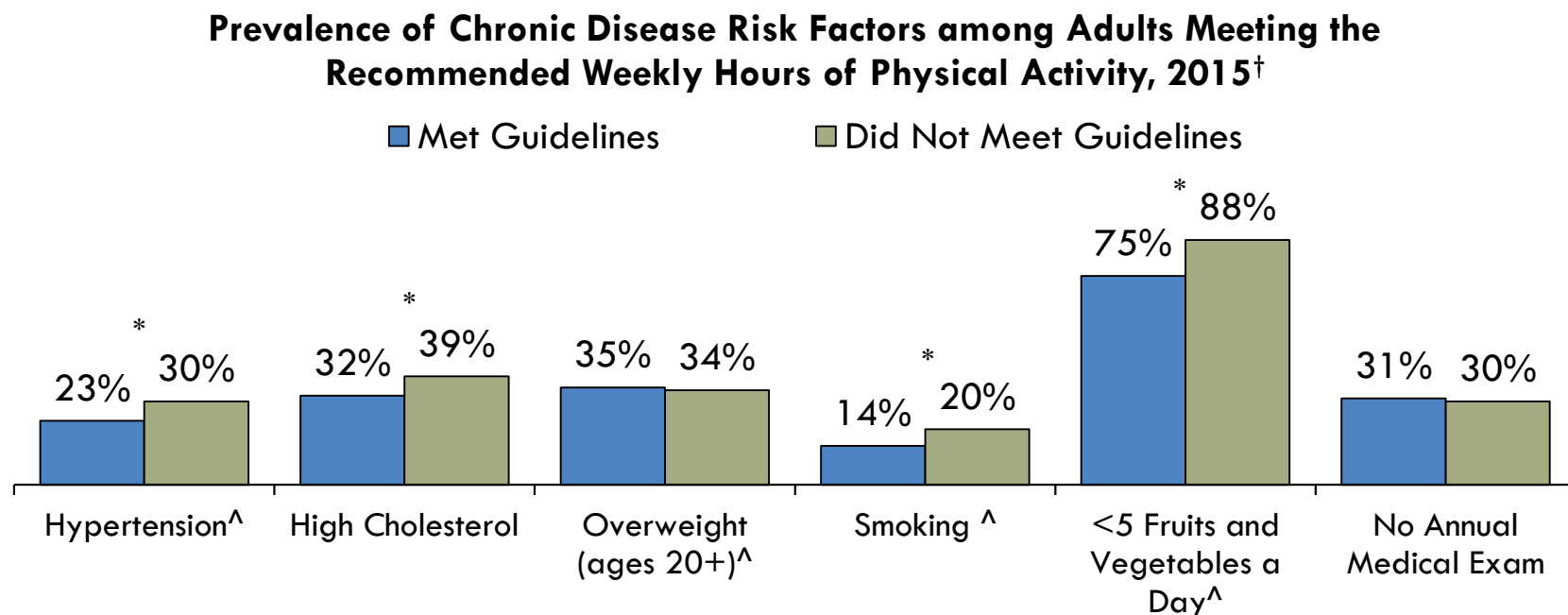
There was no significant difference in the prevalence of asthma, cancer, and chronic kidney disease among Vermont adults who met the weekly physical activity recommendations and those who did not (data not shown).



Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Chronic Disease Risk Factors among Adults Who Met CDC's Weekly Aerobic Physical Activity Guidelines

Adults who met CDC's weekly aerobic physical activity guidelines were significantly less likely to have hypertension, high cholesterol, smoke, or consume less than five fruits or vegetables a day when compared to adults who did not meet the weekly guidelines.



Source: Vermont Behavioral Risk Factor Surveillance System 2015.

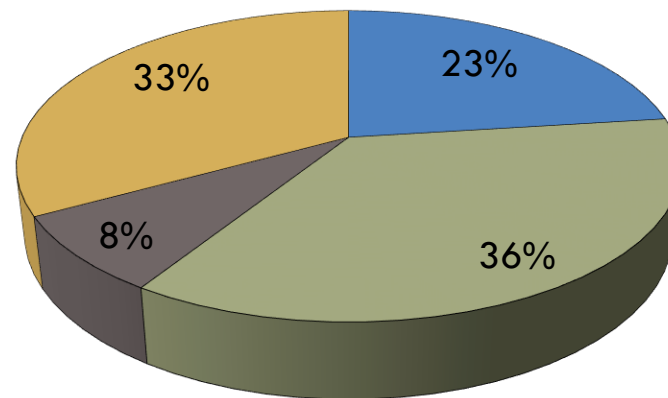
# Adult Aerobic and Muscle Strengthening Physical Activity



- Only about 1 in 4 (23%) Vermont adults met both sets of physical activity guidelines.
- This is similar to previous years.
- The majority of adult Vermonters either met only aerobic physical activity guidelines (36%) or did not meet any physical activity guidelines (33%).

**Rate of Adults Engaging in Aerobic and Muscle Strengthening Exercises, 2015**

■ Met both guidelines      ■ Met only aerobic guidelines  
■ Met only strengthening guidelines      ■ Did not meet either guideline



Source: Vermont Behavioral Risk Factor Surveillance System 2015





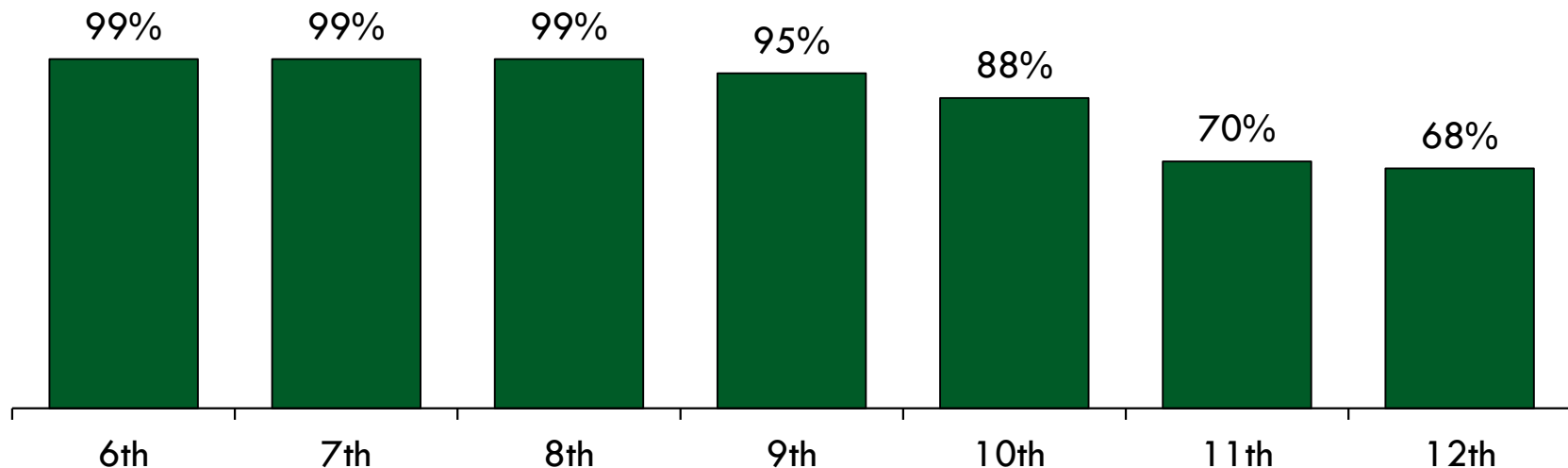
# Physical Activity in Secondary Schools

# Physical Activity in Secondary Schools – Required Physical Education



The proportion of students required to take physical education courses in Vermont secondary schools in 2016 decreased with increasing grade level. Almost all secondary schools require physical education courses to be taught in grades 6 through 8. Required physical education began to decrease in grade 9. Seven in ten schools required 11<sup>th</sup> (70%) and 12<sup>th</sup> (68%) graders to take physical education. As part of required physical education, 82% of schools taught students about balancing food intake and physical activity.

**Secondary Schools Requiring Physical Education Classes, 2016**

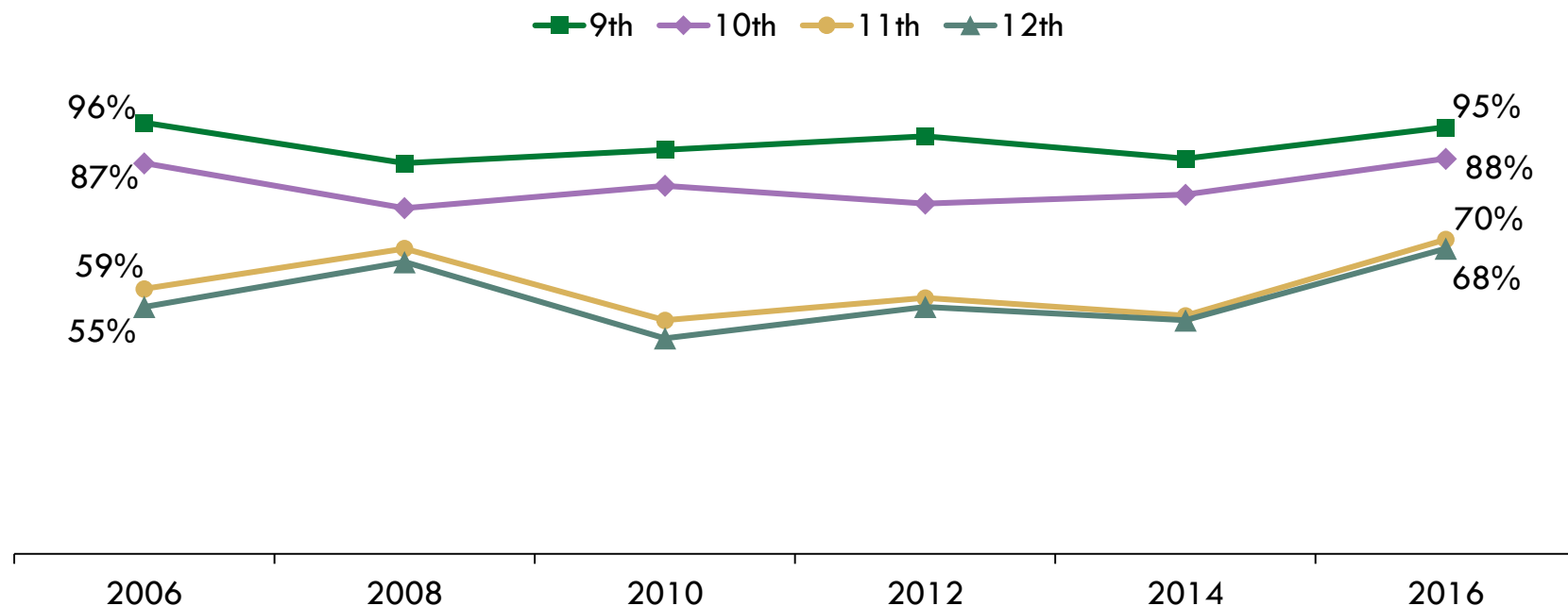


Source: 2016 Vermont School Health Profiles.

# Physical Activity in Secondary Schools – Required Physical Education

The percent of schools requiring physical education in grades 9-12 has significantly increased since 2012, with the largest increases in 11<sup>th</sup> and 12<sup>th</sup> grades. Since 2014 physical education in grades 6-8 remains stable with nearly all (99%) schools requiring it in all grades.

**Percent of Vermont Secondary Schools Requiring Physical Education, By Grade**

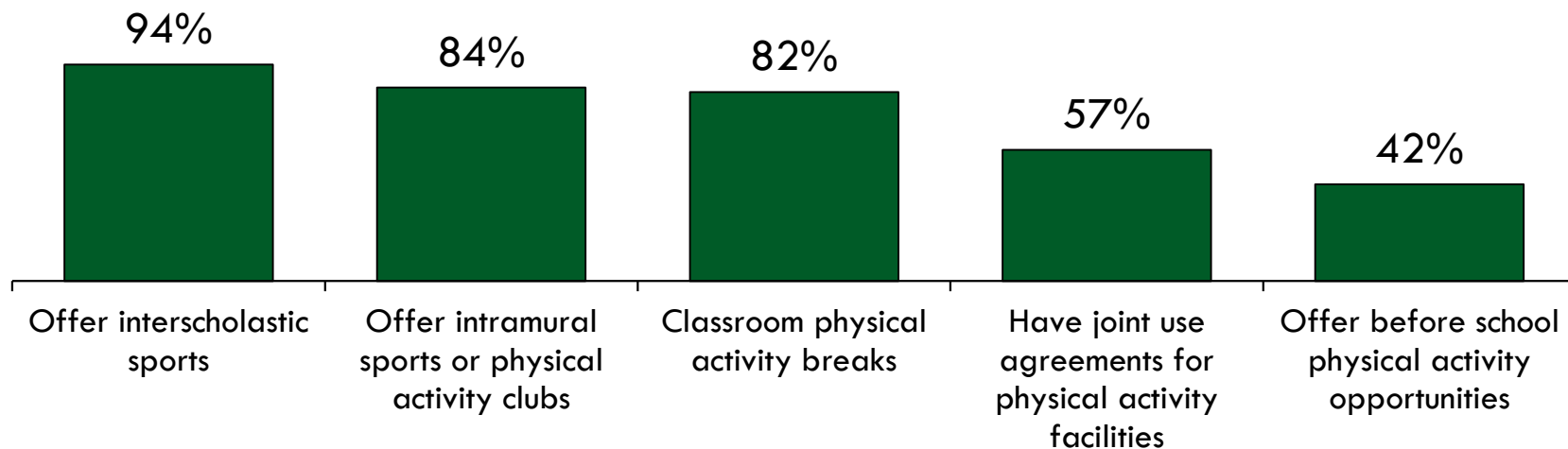


Source: Vermont School Health Profiles, 2006-2016.

# Physical Activity in Secondary Schools – Opportunities

Almost eight in ten (79%) of Vermont secondary schools had a school health council which assessed the availability of physical activity opportunities for students in 2016. Vermont secondary schools provide students with a variety of different opportunities for physical activity during and outside of school hours. The majority of secondary schools offered interscholastic sports (94%) while less than half (42%) offered before school physical activity opportunities. Middle schools were more likely than high schools to offer intramural sports or physical activity clubs, have classroom physical activity breaks, or have joint use agreements for physical activity facilities. High schools were more likely to offer interscholastic sports than middle schools.

**Opportunities for Physical Activity in Secondary Schools**

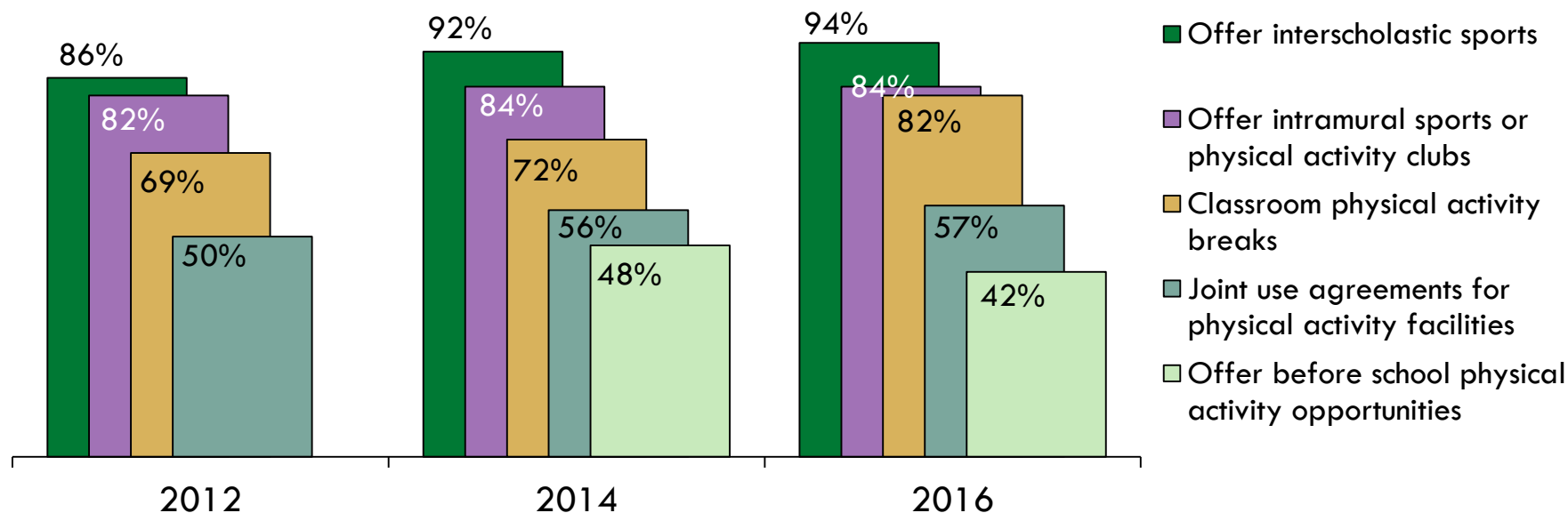


Source: 2016 Vermont School Health Profiles.

# Physical Activity in Secondary Schools – Opportunities

Overall, the proportion of Vermont secondary schools offering opportunities for physical activity has been increasing. The percentage of schools that offer students the opportunity for physical activity breaks in the classroom during the school day increased significantly from 2014 to 2016. Schools that offered students the opportunity to participate in physical activity before school decreased significantly from 2014 to 2016.

**Trend of Opportunities for Physical Activity in Vermont Secondary Schools**



Source: Vermont School Health Profiles, 2012-2016.



# Nutrition

# Nutrition Recommendations

- Fruits and vegetables are essential to a healthy diet. They are generally low in fat and calories, and high in nutrients. These foods are a major source of important vitamins and nutrients that can help reduce the risk of some types of cancer, heart disease, and stroke.
- To get the nutrients needed for a healthy diet the CDC recommends that each day a person should consume:
  - ▣ At least **2 Servings of Fruit.**
  - ▣ At least **3 Servings of Vegetables.**
- Consumption of sugary drinks (e.g. soda, energy/fruit/sports drinks) should be limited. They have little to no vitamins or nutrients in relation to their caloric contents.



# Consumption of 2 or More Fruits a Day

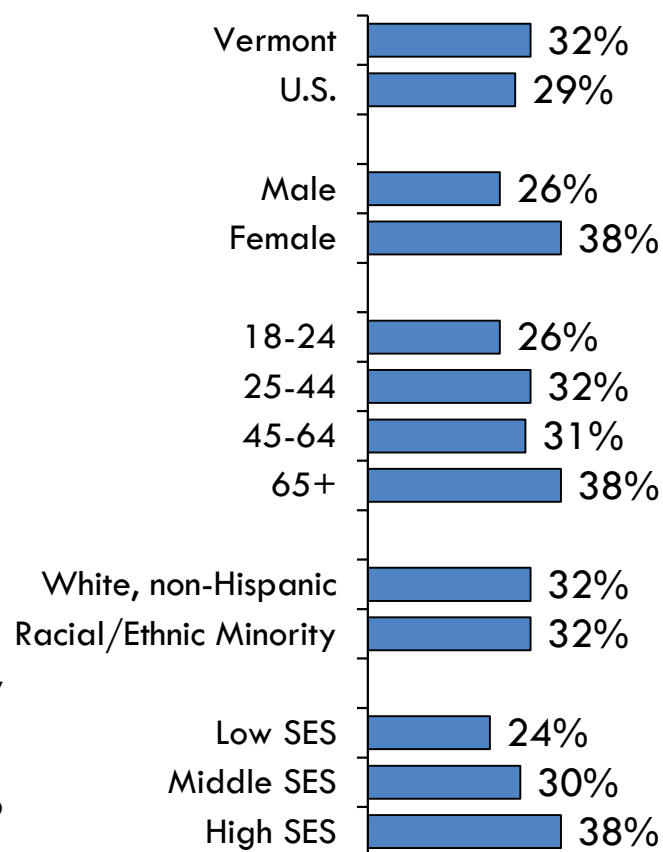


# Adults Who Consumed 2 or More Fruits a Day†

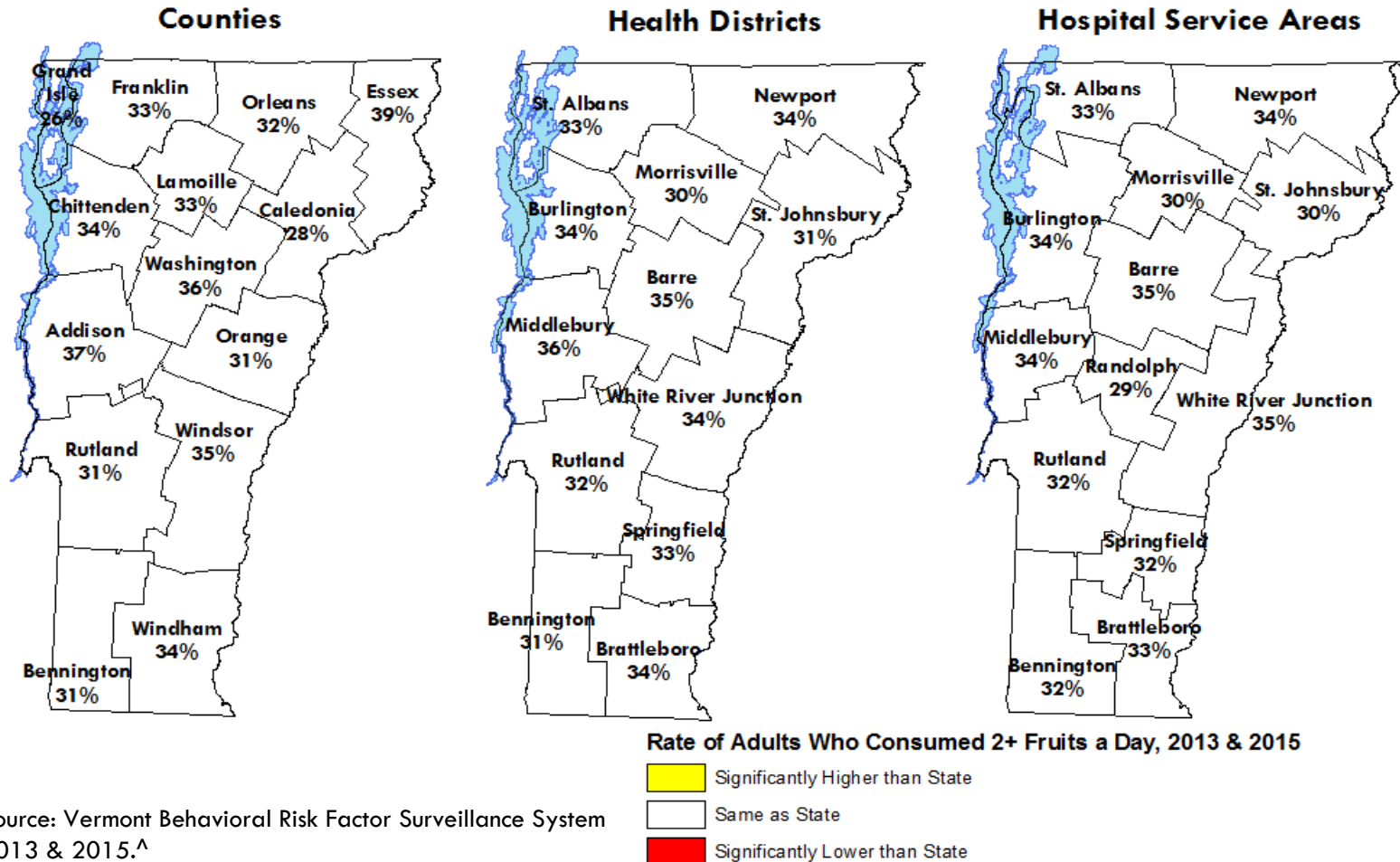
- 32% of adult Vermonters (or approximately 147,500 adults) consumed two or more fruits a day in 2015.

- Vermont adults were significantly more likely to consume two or more fruits a day than U.S. adults overall.
- Males were significantly less likely than females to consume two or more fruits a day.
- Adults 18-24 were less likely to consume 2 or more fruits a day than those 65 and older. Adults 65 and older were also more likely to consume 2 or more fruits a day than those 45-64
- Adult Vermonters who were living at a low SES were less likely to consume two or more fruits a day than those living at a high SES.
- Adults were significantly more likely to consume two or more fruits a day than three or more vegetables a day (see page 123 for adult vegetable consumption).

## Prevalence of Adults Who Consumed 2 or More Fruits a Day, 2015<sup>^</sup>



Source: Vermont Behavioral Risk Factor Surveillance System 2015.



Source: Vermont Behavioral Risk Factor Surveillance System 2013 & 2015.<sup>^</sup>

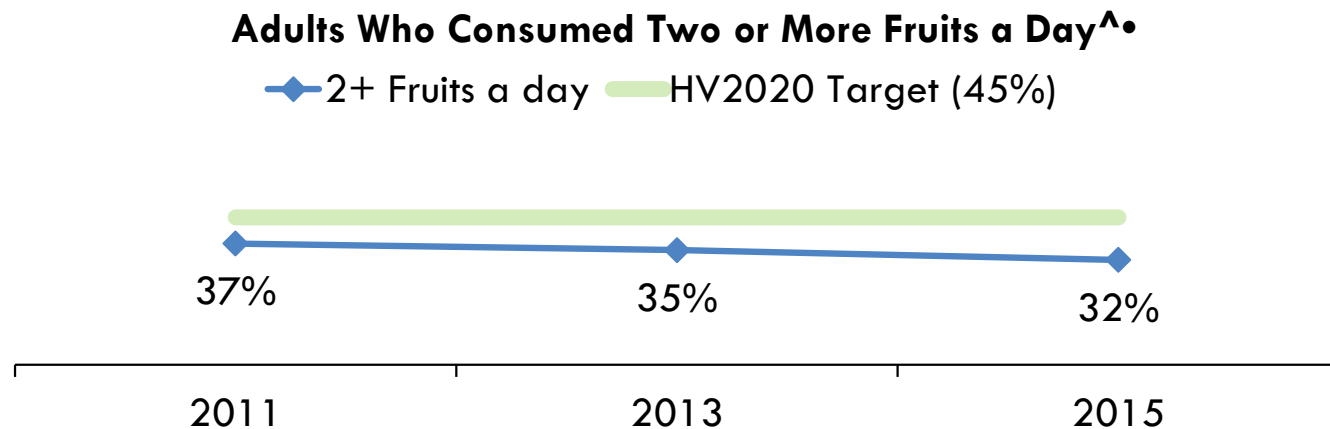
## Adults Who Consumed 2 or More Fruits a Day by Subgeography<sup>†</sup>

All state regions had similar rates of adults who consumed two or more fruits a day when compared to the statewide average.

# Adults Who Consumed 2 or More Fruits a Day†



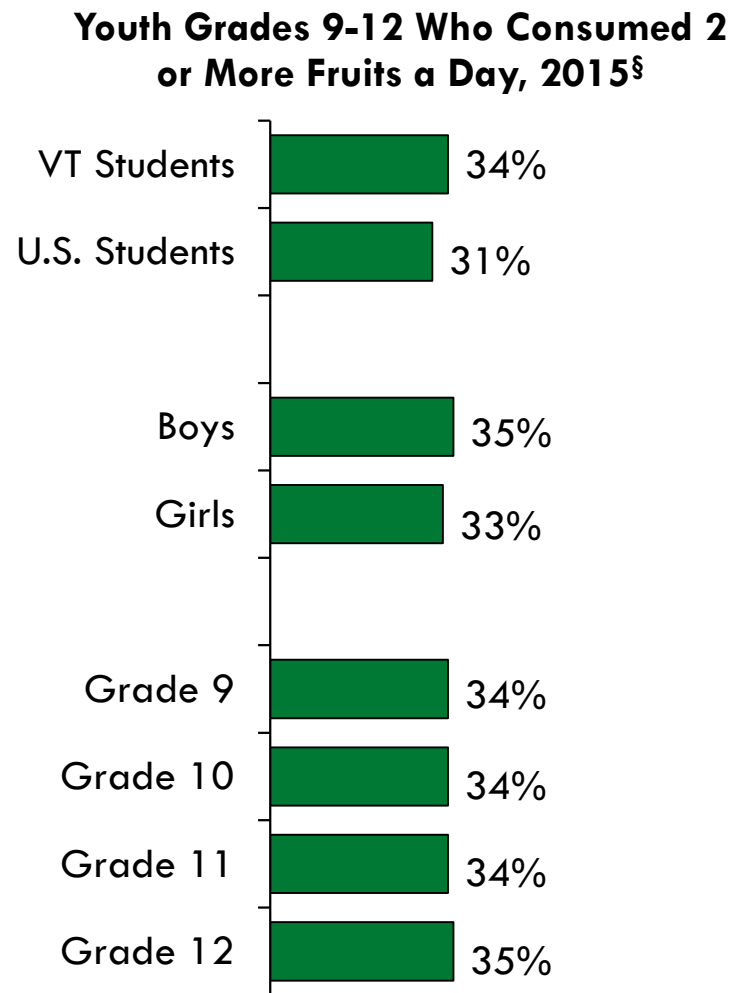
The proportion of Vermont adults who consumed two or more fruits a day is similar to previous years. The proportion of Vermont adults who consumed two or more fruits a day is below the Healthy Vermonters 2020 target of 45%.



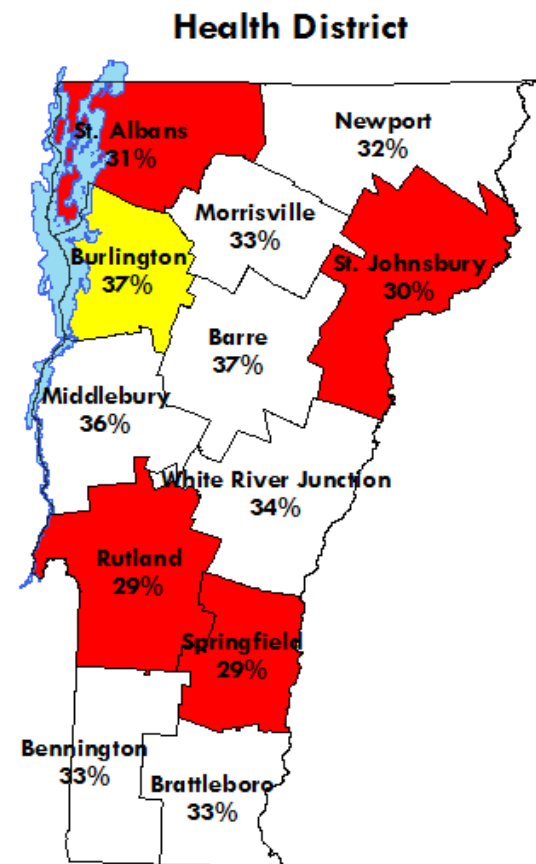
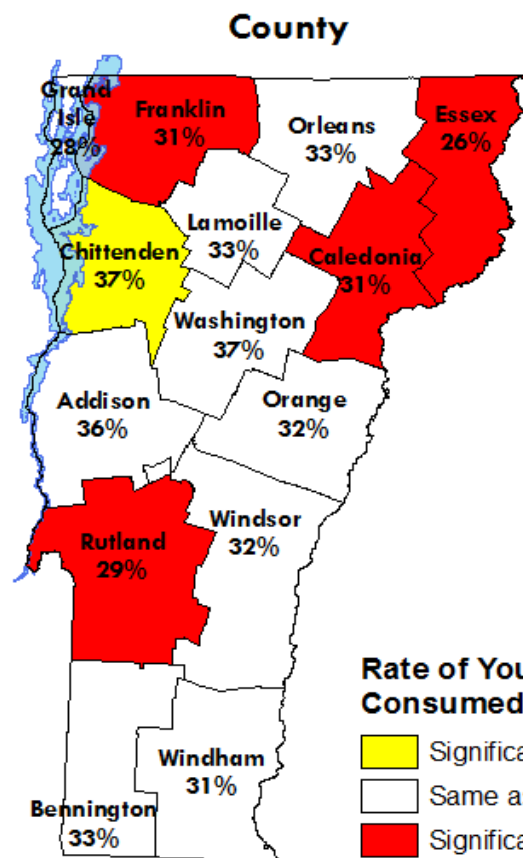
Source: Vermont Behavioral Risk Factor Surveillance System 2011-2015.

# Youth Grades 9-12 Who Consumed 2 or More Fruits a Day, 2015†

- 34% of Vermont youth grades 9-12 (or approximately 9,100 students) consumed two or more fruits a day in 2015.
  - ▣ Vermont youth were significantly more likely to consume two or more fruits a day than U.S. youth (grades 9-12).
  - ▣ There were no differences in the consumption of two or more fruits a day by gender or grade.
  - ▣ Vermont youth were significantly more likely to consume two fruits a day than three vegetables (see page 126 for youth vegetable consumption).



Source: the 2015 Vermont Youth Risk Behavior Survey.



Source: the 2015 Vermont Youth Risk Behavior Survey.

## Youth (Grades 9-12) Who Consumed 2 or More Fruits a Day by Subgeography

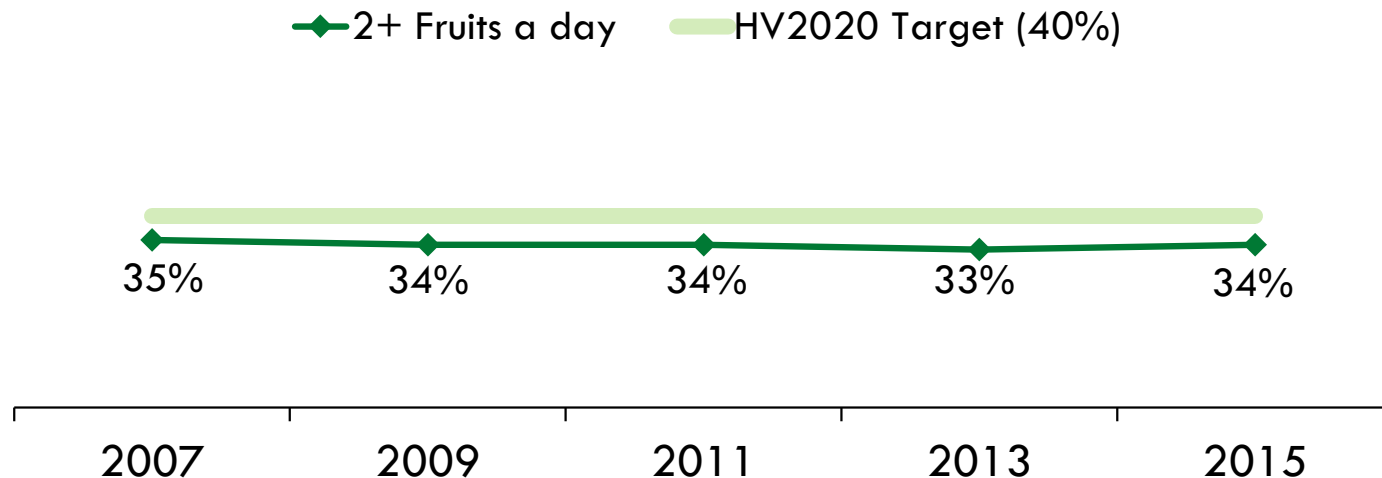
Regionally, youth in grades 9-12 in the northeastern and northwestern areas of the state as well as Rutland county and the Rutland and Springfield health districts were less likely to consume two or more fruits a day when compared to the state average.

# Youth Grades 9-12 Who Consumed 2 or More Fruits a Day†



Vermont youth grades 9-12 who consumed two or more fruits a day has remained stable for about the past decade. The proportion of Vermont youth who consumed two or more fruits a day is below the Healthy Vermonters 2020 target of 40%.

## Youth (Grades 9-12) Who Consumed 2 or More Fruits a Day§

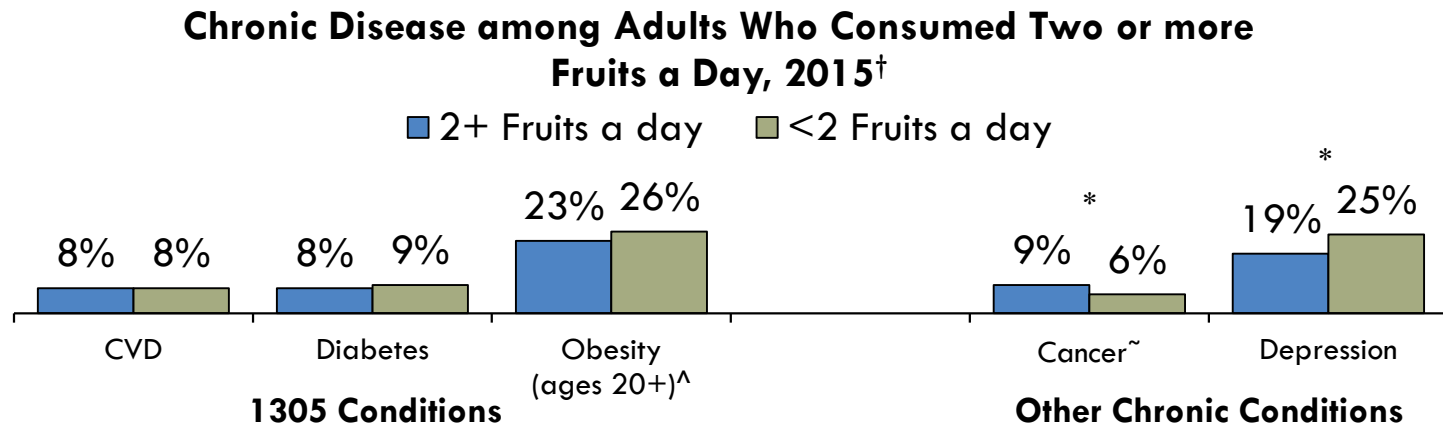


Source: the Vermont Youth Risk Behavior Survey 2007-2015.

# Prevalence of Chronic Diseases among Adults Who Consumed 2 or More Fruits a Day

Vermont adults who consumed two or more fruits a day were significantly less likely to have a depressive disorder than adults who consumed less than two fruits a day. Adults who consumed two or more fruits a day had a significantly higher prevalence of ever having had cancer than those who consumed less than two fruits a day. Research indicates that fruit and vegetable intake tends to increase after a cancer diagnosis. Therefore, Vermonters who have previously been diagnosed with cancer may be choosing to lead healthier lives as evidenced by eating more fruit.

There were no significant differences in the prevalence of arthritis, asthma, chronic kidney disease (data note shown), CVD, diabetes, or obesity between adults who consumed two or more fruits a day and those who consumed less than two day.



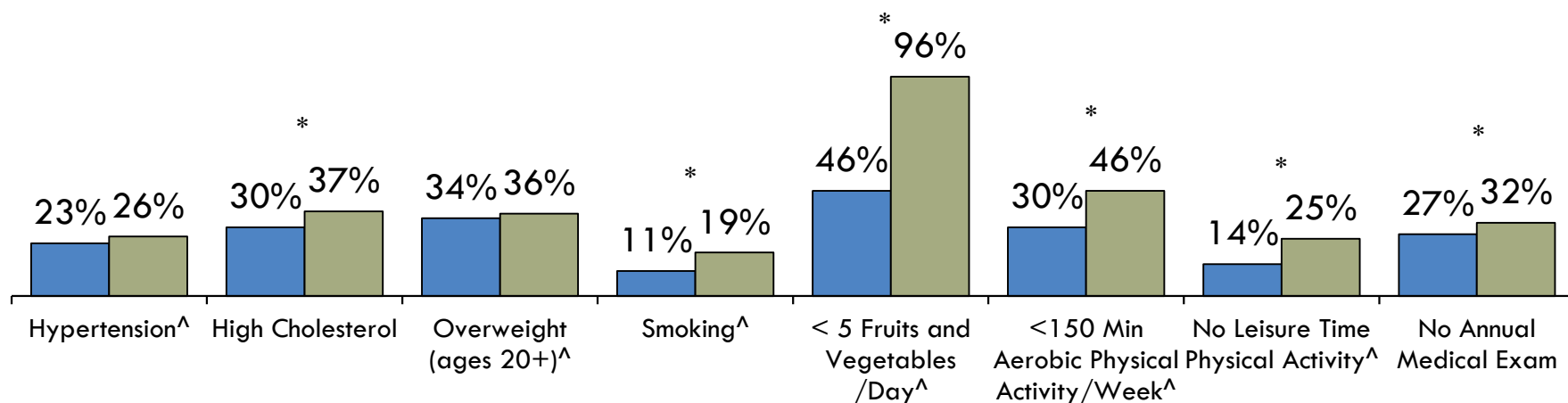
Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Prevalence of Chronic Disease Risk Factors among Adults Who Consumed 2 or More Fruits a Day

Adults who consumed two or more fruits a day were significantly less likely to have high cholesterol, smoke, consume less than five fruits or vegetables a day. They were also less likely to participate in less than 150 minutes of weekly aerobic physical activity, participate in no leisure time physical activity, and not seek annual medical care. There were no statistical differences in the prevalence of hypertension or overweight among adults who consumed two or more fruits a day and those who did not.

## Prevalence of Chronic Disease Risk Factors among Adults Who Consumed Two or More Fruits a Day, 2015<sup>†</sup>

■ 2+ Fruits a Day ■ <2 Fruits a Day



Source: Vermont Behavioral Risk Factor Surveillance System 2015.

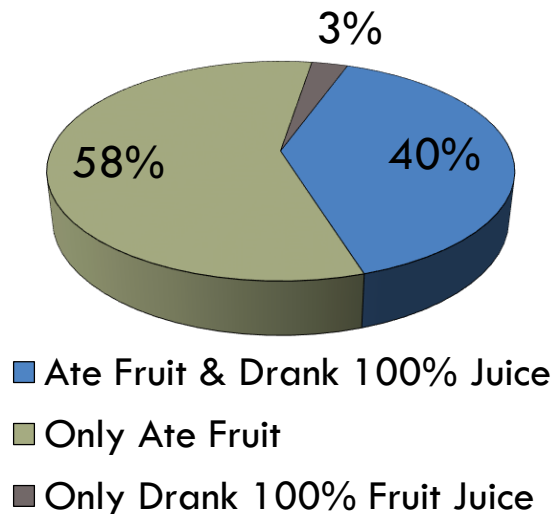


# How Adults and Youth Met 2 or More Fruits a Day<sup>†</sup>

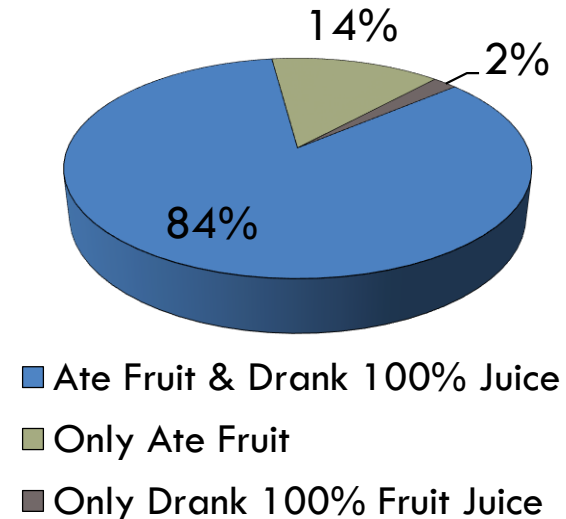
Adults most frequently met their daily fruits by eating fruit alone (58%). Fewer ate fruit and drank 100% juice (40%). Significantly more adults ate fruit alone in 2015 than did in 2013 (58% vs. 51%) while significantly fewer ate fruit and drank 100% juice in 2015 than did in 2013 (40% vs. 46%).

Youth (grades 9-12) most frequently met their daily recommended fruits by eating fruit and drinking 100% fruit juice (84%). Significantly fewer youth ate fruit & drank 100% juice in 2015 than did in 2013 and significantly more ate only fruit in 2015 than did in 2013 (14% vs. 10%).

**Adults who consumed 2+ Fruits a Day, 2015<sup>^</sup>**



**Youth (grades 9-12) who consumed 2+ Fruits, 2015<sup>§</sup>**



Source: Vermont Behavioral Risk Factor Surveillance System 2015, the 2015 Vermont Youth Risk Behavior Survey.



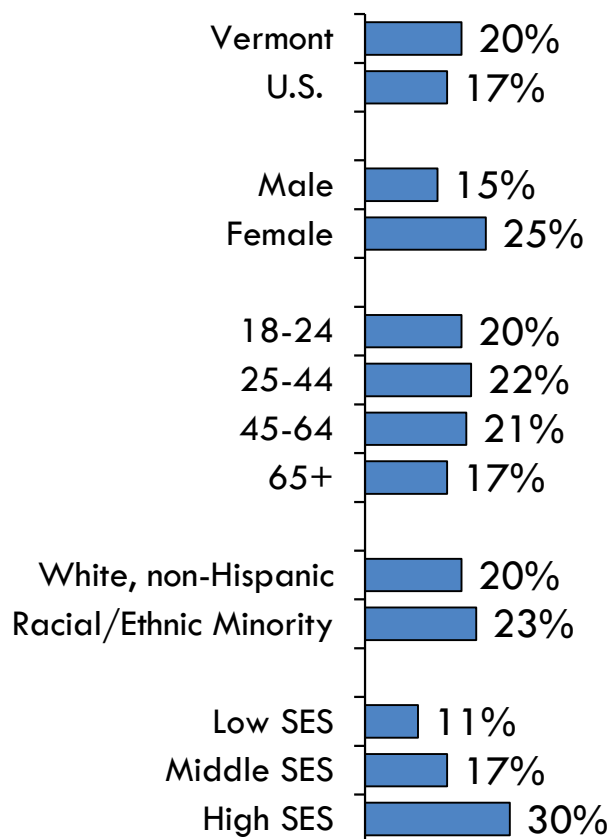
# Consumption of 3 or More Vegetables a Day

# Adults Who Consumed 3 or More Vegetables a Day<sup>†</sup>

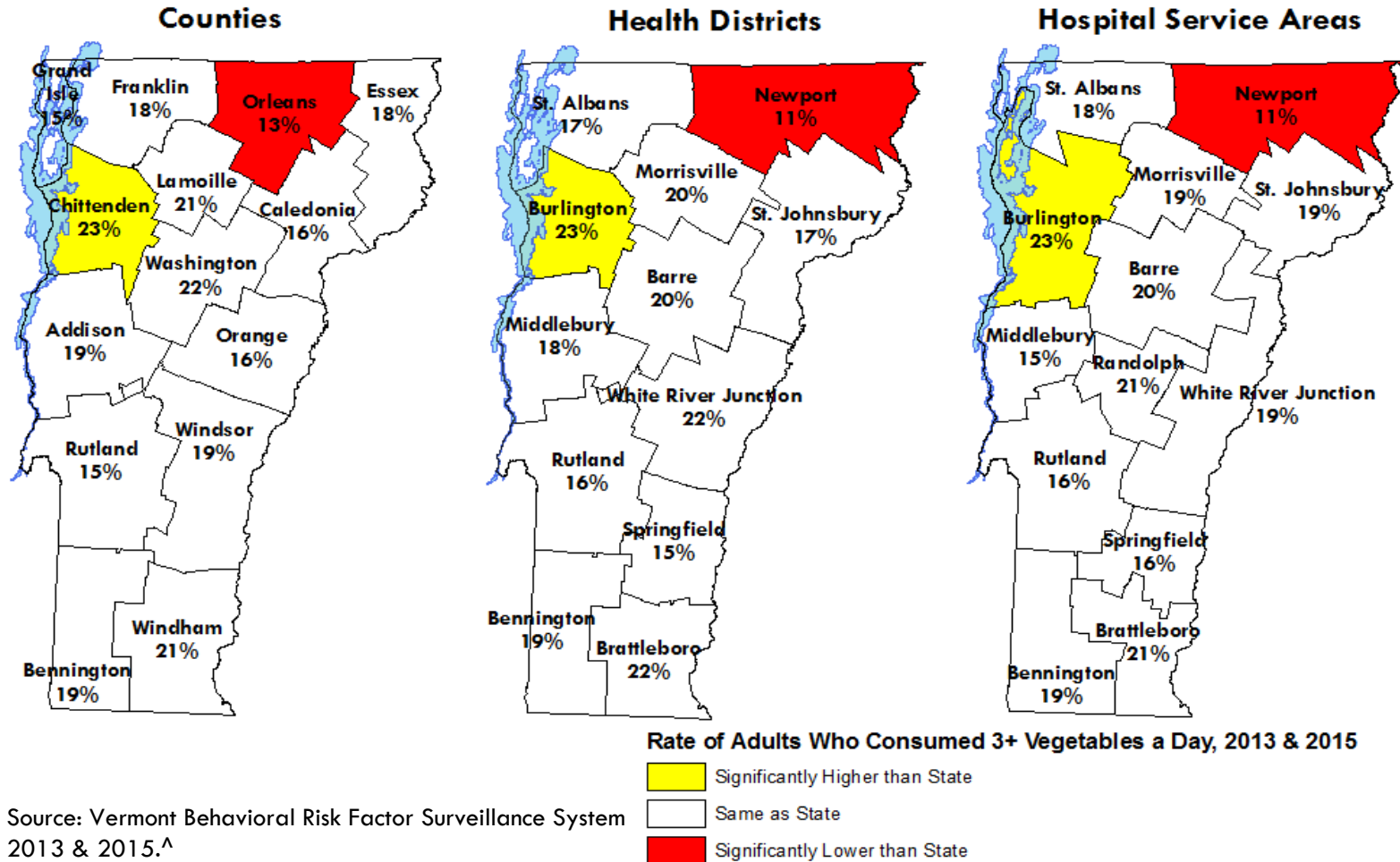
## Prevalence of Adults Who Consumed 3 or More Vegetables a Day, 2015<sup>^</sup>

□ 20% of Vermont adults (or approximately 90,600 adults) consumed three or more vegetables a day in 2015.

- Vermont adults were significantly more likely than U.S. adults overall to consume three or more vegetables a day.
- Males were significantly less likely than females to have consumed three or more vegetables a day.
- Adults who consumed three or more vegetables a day increased significantly with increasing SES.
- Adults were significantly less likely to consume three or more vegetables a day than two or more fruits a day than (see page 113 for adult fruit consumption).



Source: Vermont Behavioral Risk Factor Surveillance System 2015.



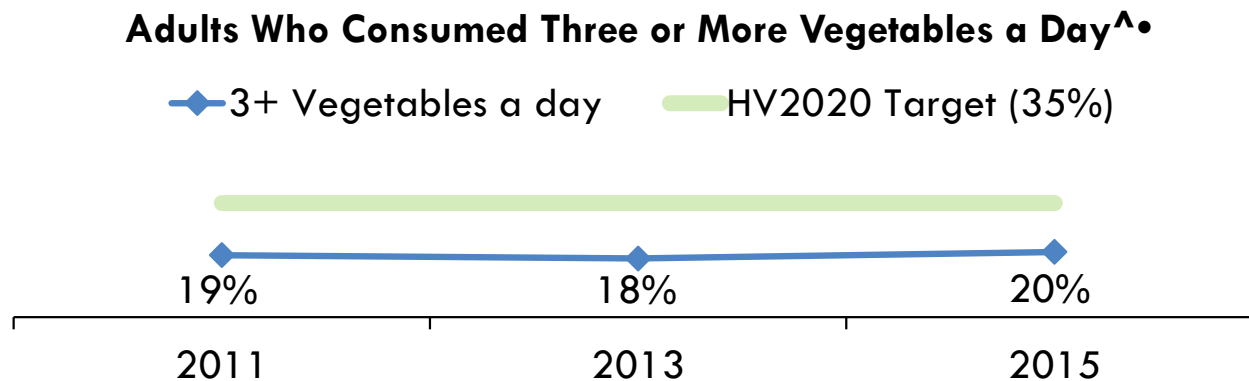
## Adults Who Consumed 3 or More Vegetables a Day by Subgeography<sup>†</sup>

Regionally, Orleans county and the Newport Health District and Hospital Service Area (HSA) were significantly lower than the state average for adults who consumed three or more vegetables a day.

# Adults Who Consumed 3 or More Vegetables a Day<sup>†</sup>



The rate of Vermont adults who consumed three or more vegetables a day was similar to previous years. The proportion of Vermont adults who consumed three or more vegetables a day is below the Healthy Vermonters 2020 target of 35%.

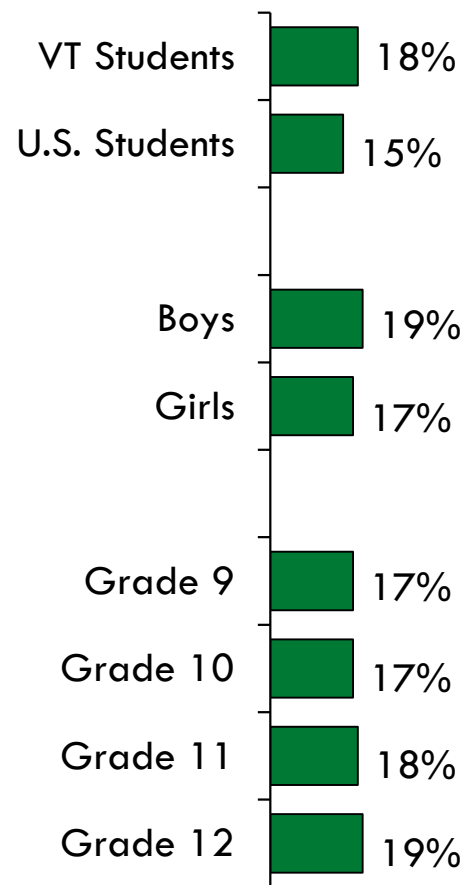


Source: Vermont Behavioral Risk Factor Surveillance System 2011-2015.

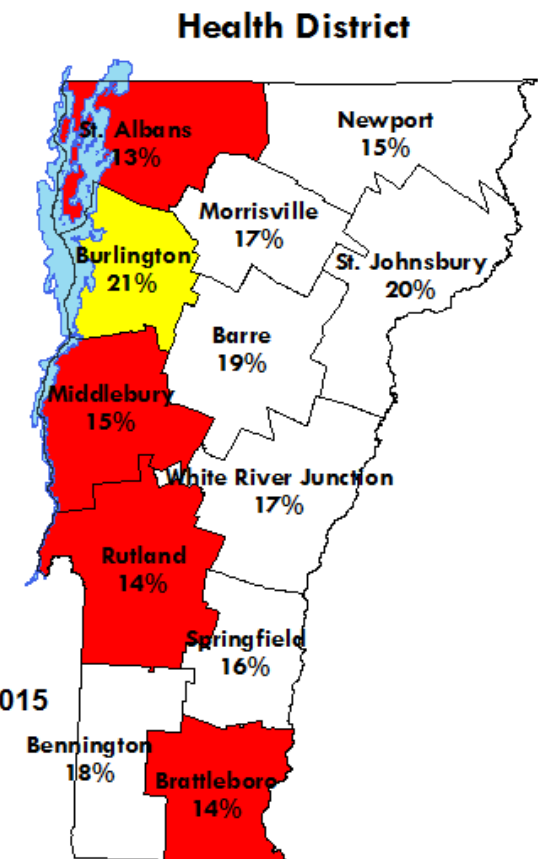
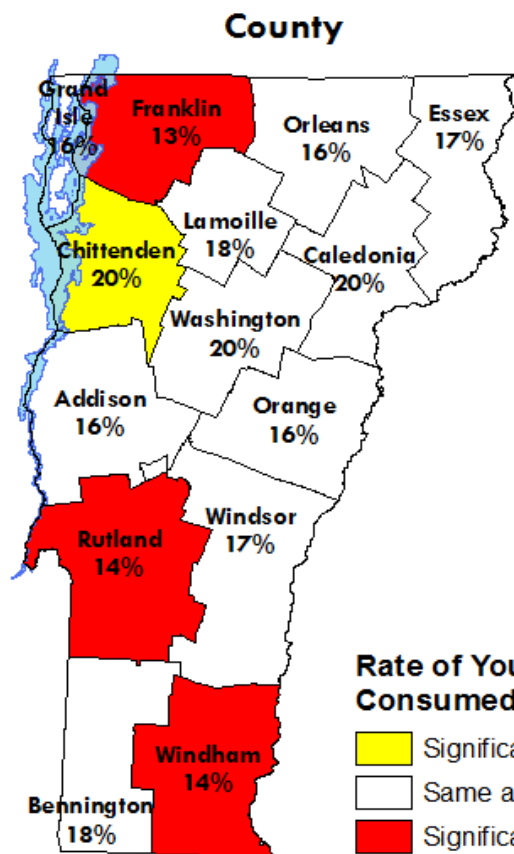
# Youth Grades 9-12 Who Consumed 3 or More Vegetables a Day, 2015†

- 18% of Vermont youth grades 9-12 (or approximately 4,800 students) consumed three or more vegetables a day in 2015.
- ▣ Vermont youth were significantly more likely than U.S. youth (grades 9-12) to consume three or more vegetables a day.
- ▣ There were no differences in the consumption of three or more vegetables a day by gender or grade.
- ▣ Vermont youth were significantly more likely to consume two fruits a day than three vegetables (see page 116 for youth fruit consumption).

## Youth Grades 9-12 Who Consumed 3 or More Vegetables a Day, 2015§



Source: the 2015 Vermont Youth Risk Behavior Survey.



Source: the 2015 Vermont Youth Risk Behavior Survey.

## Youth (grades 9-12) Who Consumed 3 or More Vegetables a Day by Subgeography

Regionally, several counties and health districts near the western Vermont border showed significantly lower rates of consuming three or more vegetables a day than the state average except for Chittenden and Bennington counties and the Burlington and Bennington Health Districts. Windham County and the Brattleboro Health District also showed significantly lower rates of vegetable consumption than the state average.

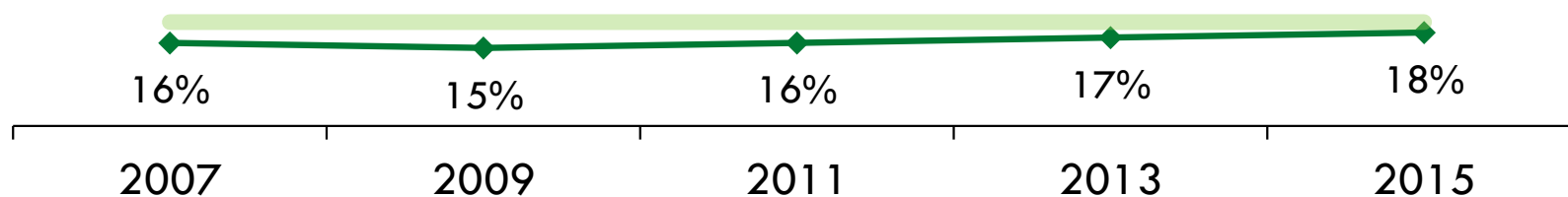
# Youth Grades 9-12 Who Consumed 3 or More Vegetables a Day<sup>†</sup>



Vermont youth grades 9-12 who consumed three or more vegetables a day has remained stable for about the past decade. Youth who consumed three or more vegetables a day remains below the Healthy Vermonters 2020 target of 20%.

## Youth Grades 9-12 Who Consumed 3 or More Vegetables a Day<sup>§</sup>

◆ 3+ Vegetables a day      — HV2020 Target (20%)



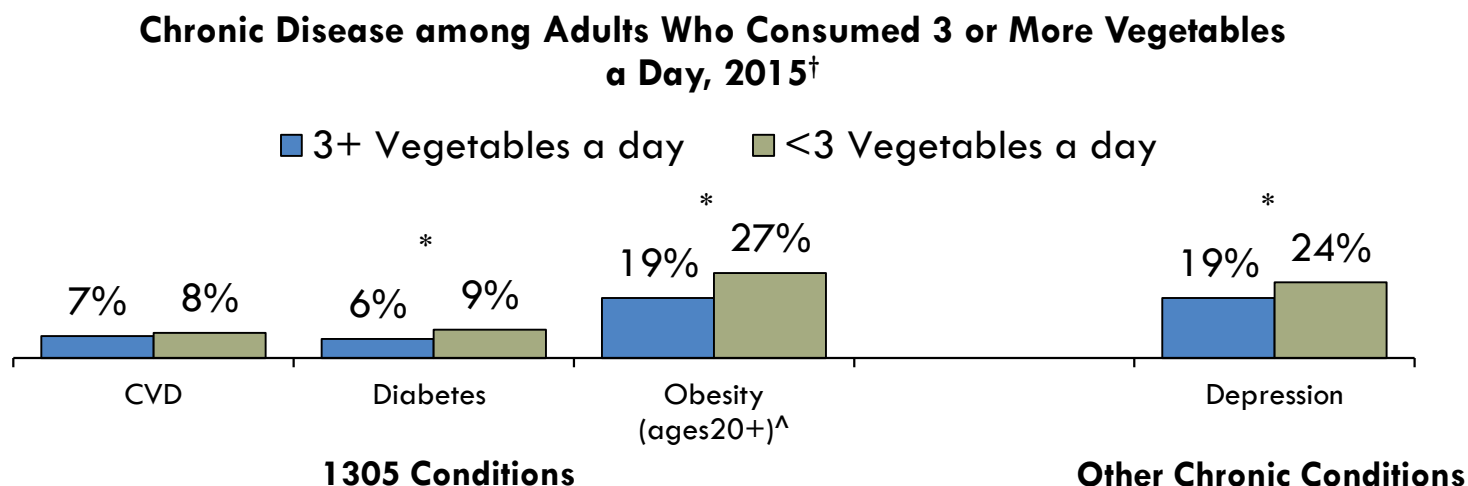
Source: the Vermont Youth Risk Behavior Survey 2007-2015.



# Prevalence of Chronic Disease among Adults Who Consumed 3 or More Vegetables a Day

Adults who consumed three or more vegetables a day were significantly less likely to have diabetes, be obese, or have depressive disorder when compared to adults who consumed less than three vegetables a day.

There were no significant differences in the prevalence of arthritis, asthma, cancer, chronic kidney disease, COPD (data not shown), or cardiovascular disease (CVD) between adults who consumed three or more vegetables a day and those who consumed less than three a day.



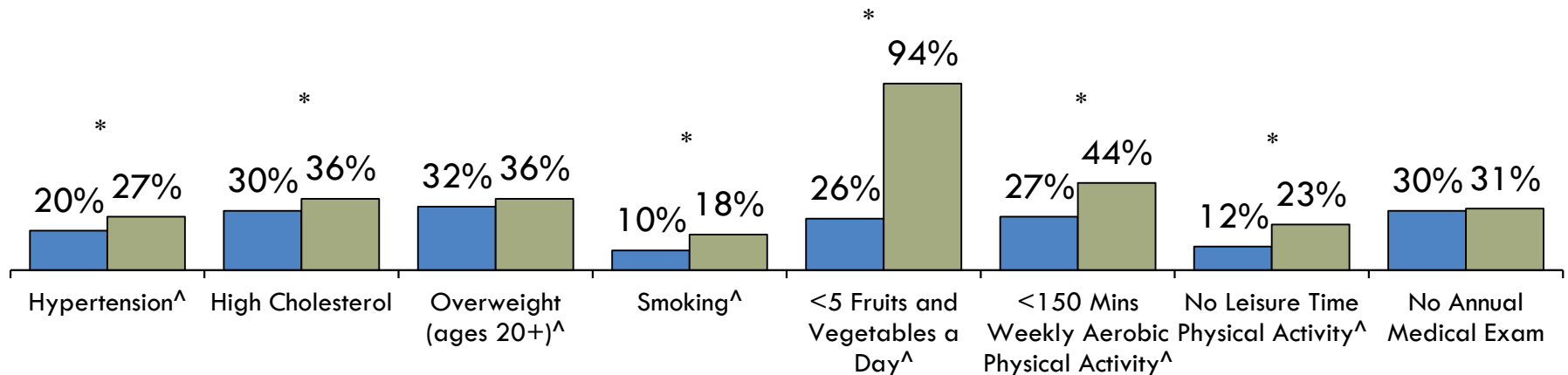
Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Prevalence of Chronic Disease Risk Factors among Adults Who Consumed 3 or More Vegetables a Day

Adults who consumed three or more vegetables a day were significantly less likely to have hypertension, high cholesterol, smoke, consume less than five fruits and vegetables a day, participate in less than 150 minutes of weekly aerobic physical activity, or participate in no leisure time physical activity when compared to adults who consumed less than three vegetables a day.

## Prevalence of Chronic Disease Risk Factors among Adults Who Consumed 3 or More Vegetables a Day, 2015<sup>†</sup>

■ 3+ Vegetables a day    ■ <3 Vegetables a day



Source: Vermont Behavioral Risk Factor Surveillance System 2015.



# Consumption of Less Than 1 Soda/Sugar Sweetened Beverage a Day

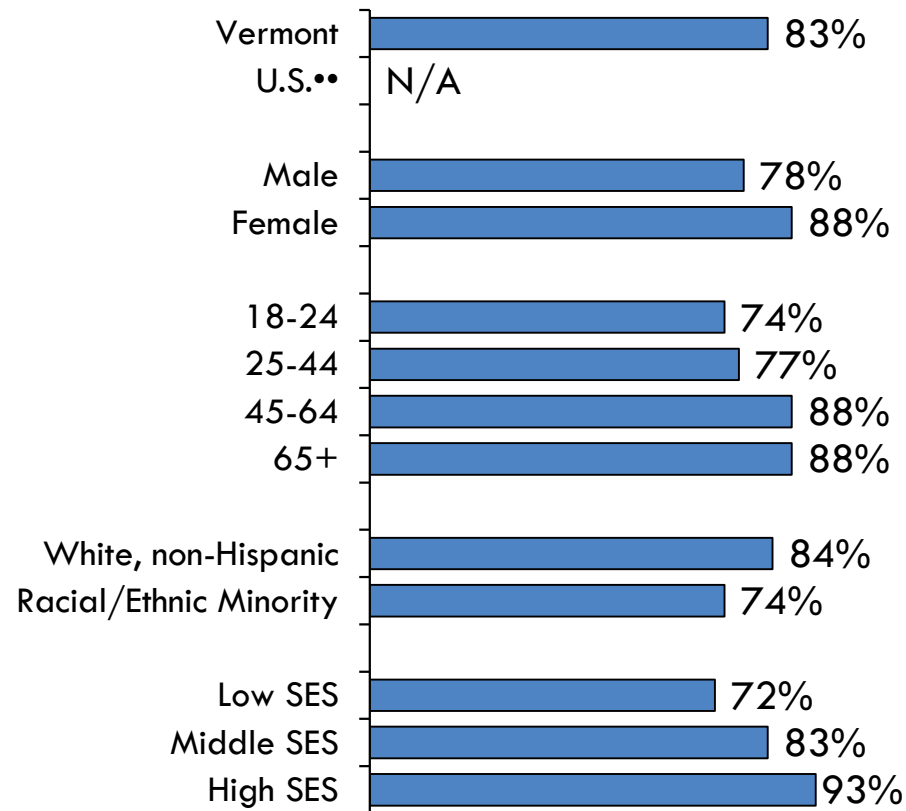
# Adults Who Consumed Less Than 1 Soda/ Sugar-Sweetened Beverage a Day



□ 83% of Vermont adults (or approximately 369,700 adults) consumed less than one soda/sugar-sweetened beverage a day in 2013.

- ▣ Women were significantly more likely to have consumed less than one soda/sugar-sweetened beverage a day than men.
- ▣ Adults 45 and older were significantly more likely than adults 18-44 to consume less than one soda/sugar-sweetened beverage a day.
- ▣ White, non-Hispanic adults were more likely to consume less than one soda/sugar-sweetened beverage a day.
- ▣ Consumption of less than one soda/sugar-sweetened beverage a day decreased significantly with decreasing SES.
- ▣ Vermont adults were significantly less likely to have consumed less than one soda a day than one sugar-sweetened beverage (90% vs. 93%).

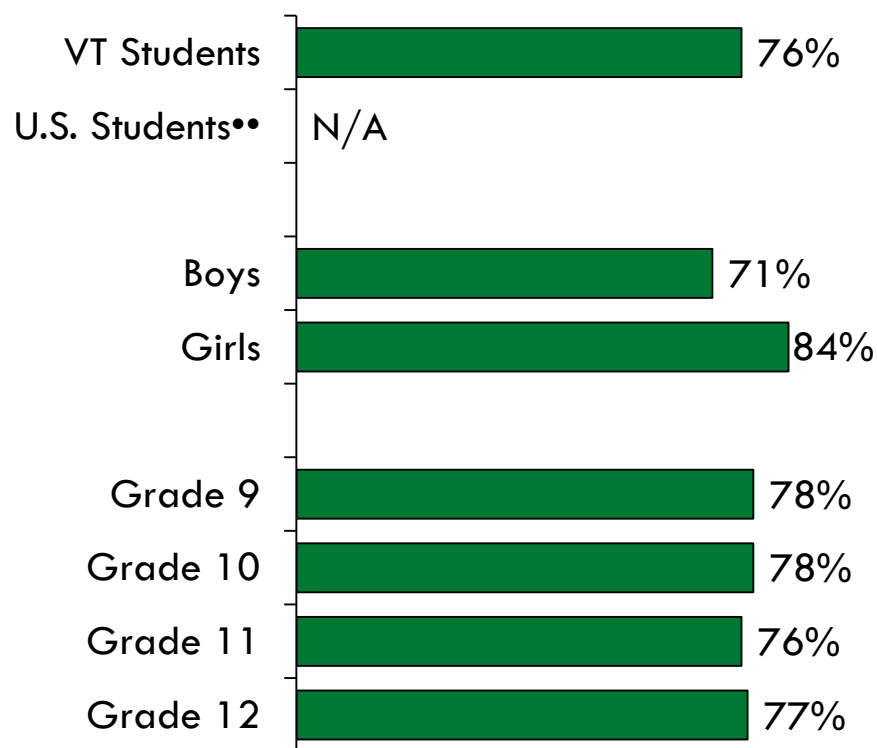
## Prevalence of Adults Who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day, 2013<sup>†</sup>



Source: Vermont Behavioral Risk Factor Surveillance System 2013.

# Youth Grades 9-12 Who Consumed Less Than 1 Soda/Sugar-Sweetened Beverage a Day

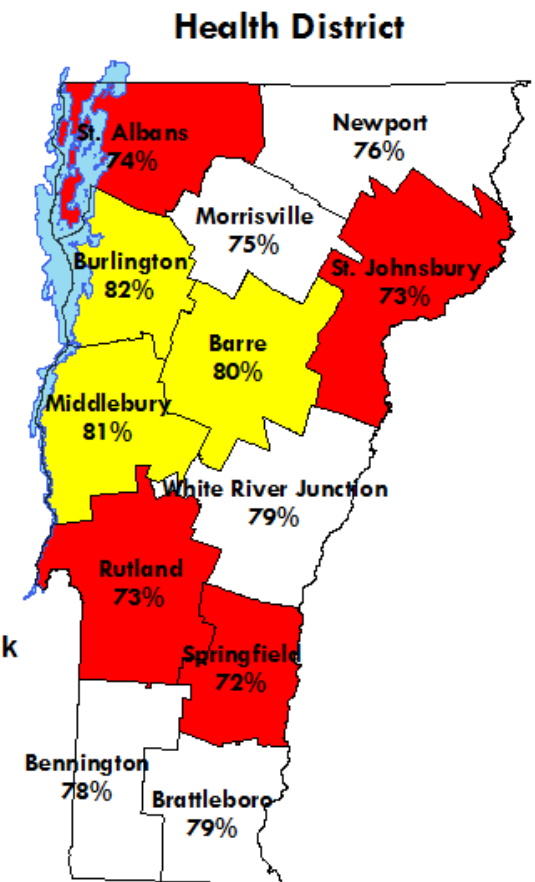
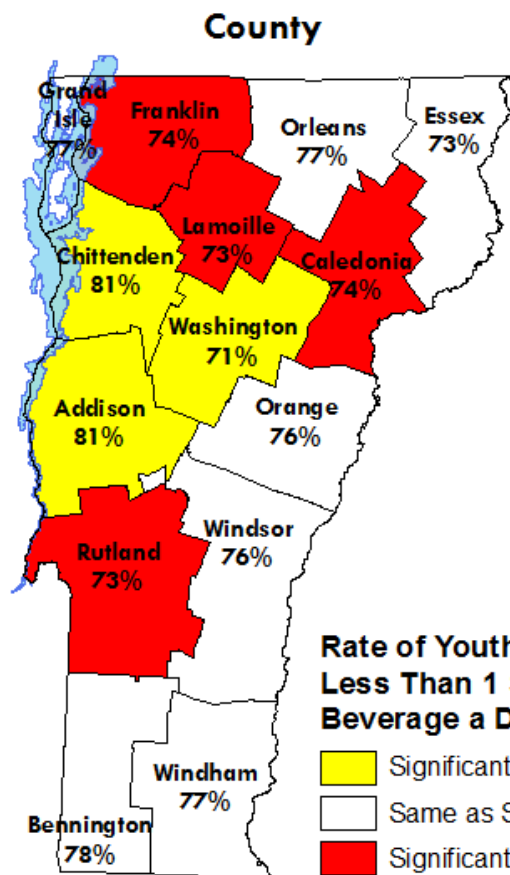
## Prevalence of Youth Grades 9-12 Who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day, 2015<sup>†</sup>



□ 76% of Vermont youth grades 9-12 (or approximately 20,500 students) drank less than one soda/sugar-sweetened beverage a day in 2015.

- ▣ Boys were significantly less likely than girls to have consumed less than one soda/sugar-sweetened beverage a day.
- ▣ There were no differences in soda/sugar-sweetened beverage consumption by grade.

Source: the 2015 Vermont Youth Risk Behavior Survey.



Source: the 2015 Vermont Youth Risk Behavior Survey.

## Youth (Grades 9-12) Who Consumed <1 Soda/Sugar-Sweetened Beverage a Day

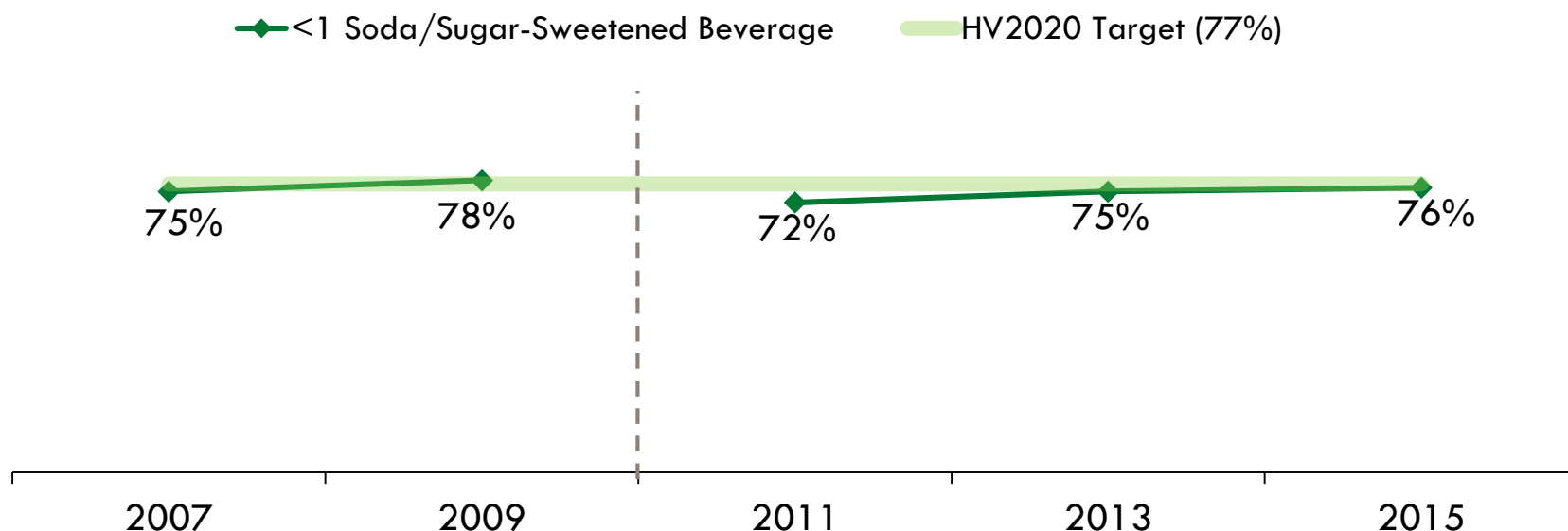
Franklin, Caledonia, Lamoille, and Rutland counties along with the St. Albans, St. Johnsbury, Rutland, and Springfield health districts showed a significantly lower than state average consumption for youth (grades 9-12) who drank less than one soda/sugar-sweetened beverage a day.

# Youth Grades 9-12 Who Consumed Less Than 1 Soda/Sugar-Sweetened Beverage a Day<sup>†</sup>



The prevalence of Vermont youth grades 9-12 who consumed less than one soda/sugar-sweetened beverage a day increased significantly from 2013 to 2015. Youth who consumed less than one soda/sugar-sweetened beverage a day is nearing the Healthy Vermonters 2020 target of 77%.

## Prevalence of Youth Who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day.<sup>+</sup>



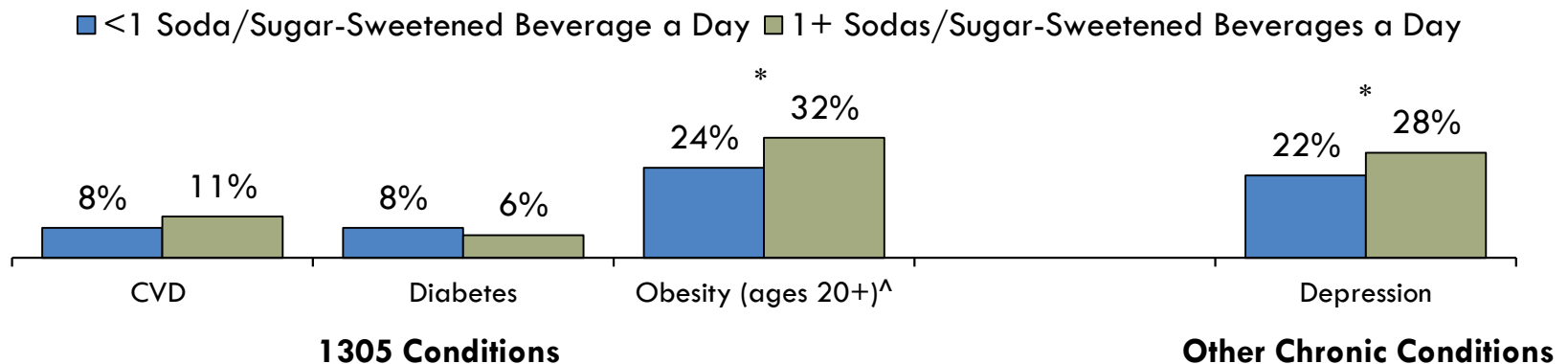
Source: the 2015 Vermont Youth Risk Behavior Survey.

# Prevalence of Chronic Diseases among Adults Who Consumed Less Than 1 Soda or One Sugar-Sweetened Beverage

Adult Vermonters who consumed less than one soda/sugar-sweetened beverage a day were significantly less likely to be obese or have a depressive disorder when compared to those who consumed one or more a day.

There was no significant difference in the prevalence of arthritis, asthma, cancer, chronic kidney disease, COPD (data not shown), CVD, or diabetes between adults who consumed less than one soda/sugar-sweetened beverage a day and those that consumed one or more a day.

## Prevalence of Chronic Disease among Adults who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day, 2013<sup>†</sup>



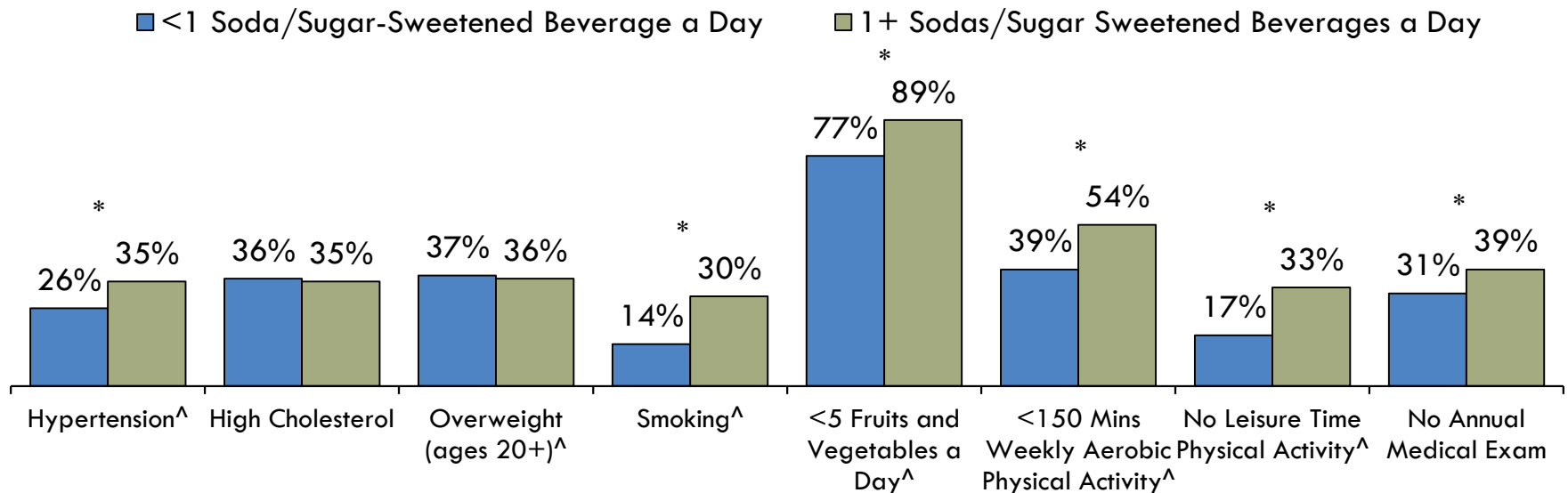
Source: Vermont Behavioral Risk Factor Surveillance System 2013.



# Prevalence of Chronic Disease Risk Factors among Adults Who Consumed Less Than 1 Soda/Sugar-Sweetened Beverage a Day

Vermont adults who consumed less than one soda/sugar-sweetened beverage a day were significantly less likely to have hypertension, smoke, consume less than five fruits and vegetables a day, participate in less than 150 minutes of aerobic physical activity a week, participate in no leisure time physical activity, and not receive an annual medical exam when compared to adults who consumed one or more sodas/sugar-sweetened beverages a day.

## Chronic Disease Risk Factors among Adults Who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day, 2013<sup>†</sup>



Source: Vermont Behavioral Risk Factor Surveillance System 2013.



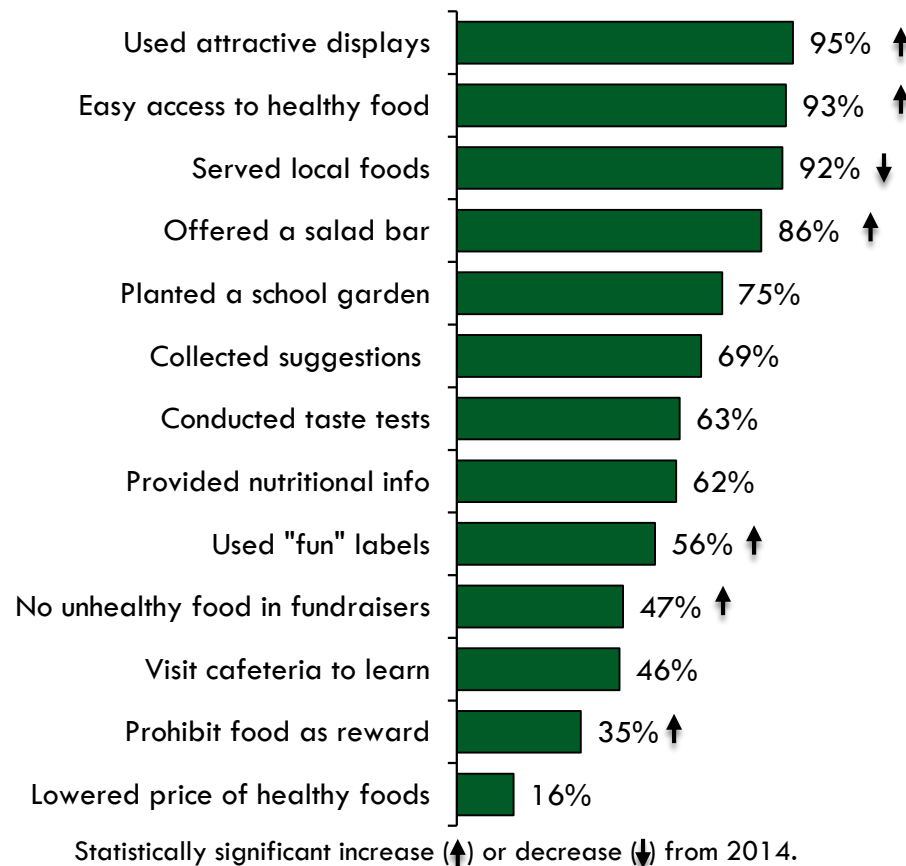
# Nutrition in Schools

# Nutrition in Secondary Schools – Promoting Healthy Eating



- 74% of Vermont secondary schools did not sell “less healthy” foods and beverages, significantly higher than the 60% who did in 2014.
- To promote healthy eating, the majority of Vermont schools used attractive displays (95%). They also frequently located foods near the cashier where they were easy to access (93%) or served local foods (92%).
- 62% of schools provided nutrition or caloric information in the cafeteria.
- Only 16% of schools lowered the price of nutritious items and increased the price of less nutritious foods.
- The proportion of schools that prohibit unhealthy food in fundraisers almost doubled from 2014 to 2016 (25% vs. 47%).

## Efforts Used in Secondary Schools to Promote Healthy Eating, 2016<sup>†</sup>



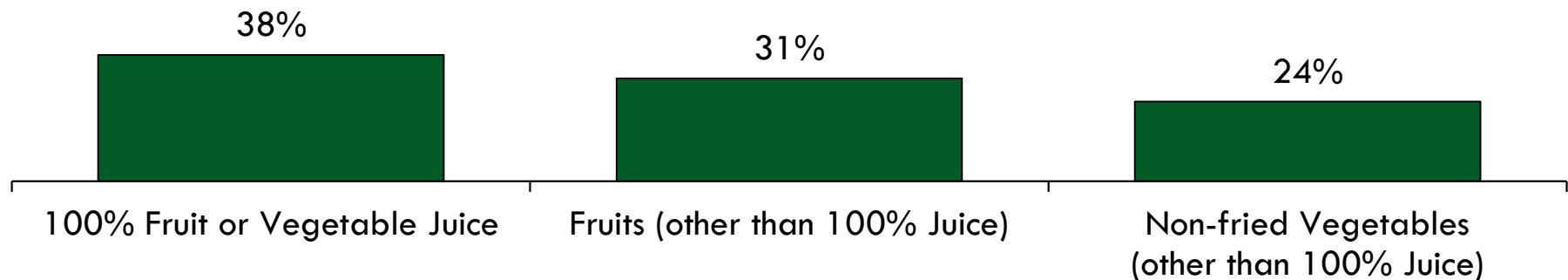
Source: 2016 Vermont School Health Profiles.

# Nutrition in Secondary Schools – Vending Machines



In 2016, 46% of secondary schools allowed students to purchase foods and beverages from vending machines or snack bars. This is a significant decrease from the 80% who did in 2008 as well as the 55% who did in 2014. Secondary schools most commonly have 100% fruit or vegetable juice (38%) available in their vending machine and least commonly had non-fried vegetables (24%) available. The proportion of schools providing 100% fruit or vegetable juice, fruit, and non-fried vegetables in their vending machines is similar to 2014. One-quarter (24%) of secondary schools offered both fruits and vegetables for purchase from their vending machines.

## Secondary Schools with Fruit and Vegetable Options in their Vending Machines, 2016



Source: 2016 Vermont School Health Profiles.

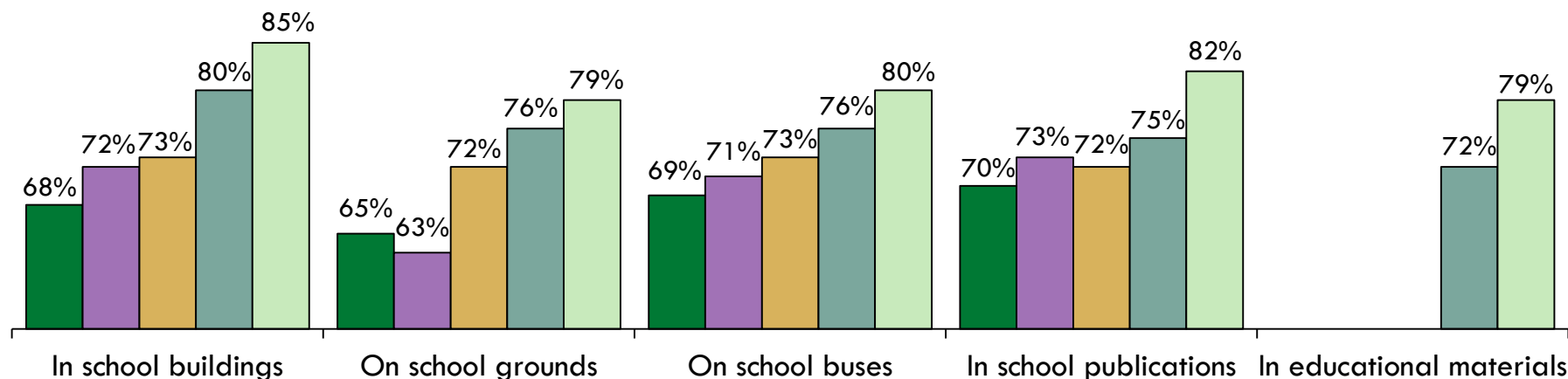
# Nutrition in Secondary Schools – Junk-Food Advertising



Currently, 73% of schools prohibit all forms of advertising for candy, fast food, and soft drinks in all five possible locations where advertisements could be posted. This is significantly higher than the 66% who did in 2014. Schools most commonly ban advertisement within the school buildings (85%). Prohibiting junk-food advertising in school buildings, on school buses, in school publications, and in educational materials significantly increased from 2014 to 2016. The trend of prohibiting junk-food advertisement by schools has significantly increased since 2008 in all areas.

**Trend of Junk-Food Advertising in Vermont Secondary Schools, 2008-2016**

■ 2008 ■ 2010 ■ 2012 ■ 2014 ■ 2016

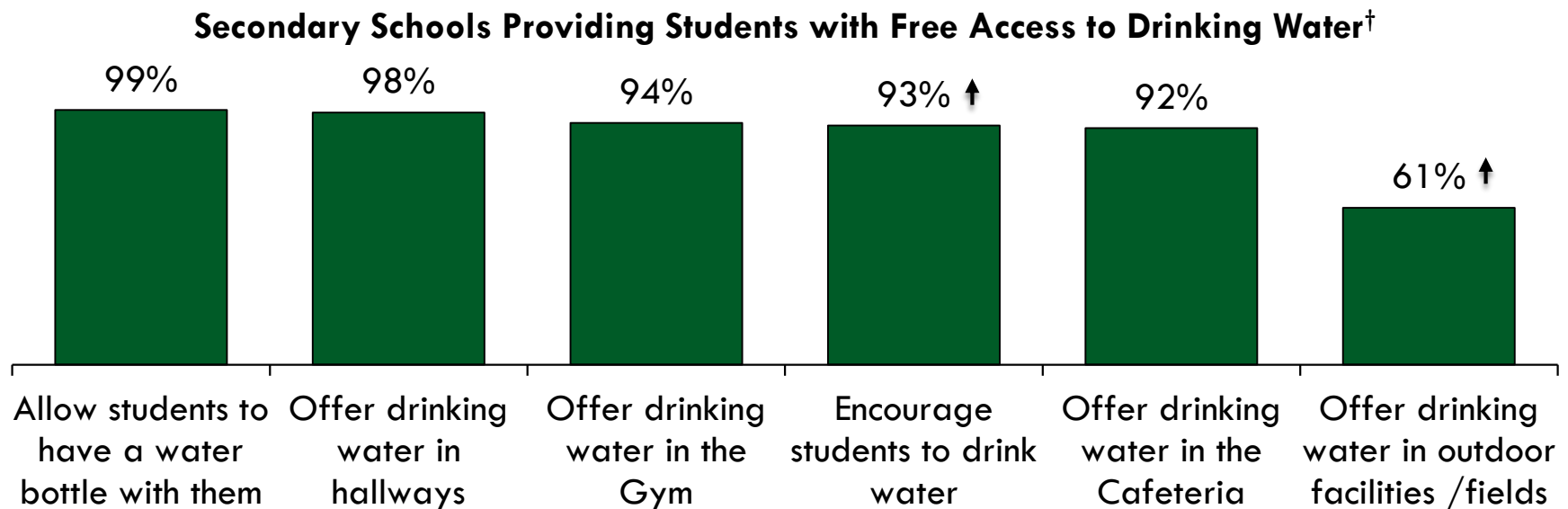


Source: Vermont School Health Profiles, 2008-2016.

# Nutrition in Secondary Schools – Free Access to Drinking Water



The majority of Vermont secondary schools encourage students to drink plain water (93%). This is significantly higher from the 86% who did in 2014. Schools allow and provide access to drinking water in a variety of locations throughout the school and grounds. Allowing students to have a water bottle (99%) or offering drinking water in hallways (98%) were the most common approaches. However, only roughly half of schools (54%) offer access to free drinking water in outdoor physical activity facilities and sport fields.



Source: 2016 Vermont School Health Profiles.

Statistically significant increase (↑) or decrease (↓) from 2014.



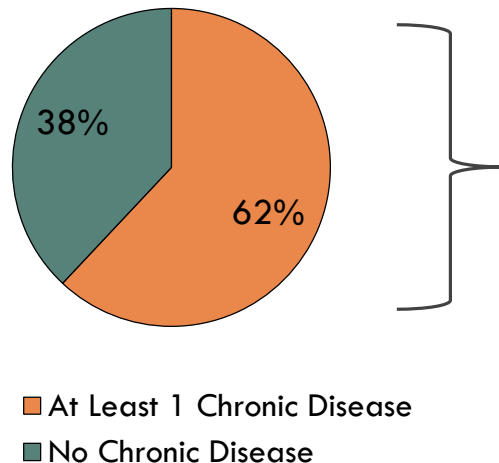
# Multiple Chronic Conditions

# Adult Prevalence of Multiple Chronic Conditions

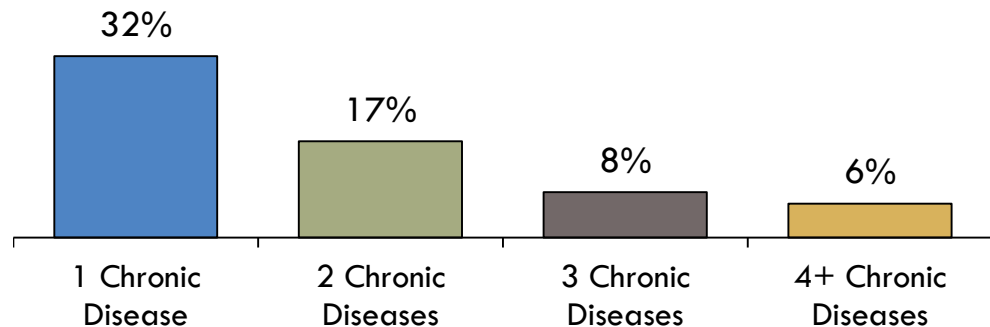
Overall, 62% of all Vermont adults had at least one chronic disease in 2015. Chronic diseases assessed included arthritis, asthma, cancer, cardiovascular disease, chronic kidney disease, chronic obstructive pulmonary disorder, depressive disorder, diabetes, and obesity.

Of adult Vermonters living with at least one chronic disease, 52% had at least one 1305-related chronic disease (these include: cardiovascular disease, diabetes, and obesity).

**Vermont Adults With At Least One Chronic Condition, 2015**



**Adult Prevalence of the Number of Chronic Diseases They Have, 2015**



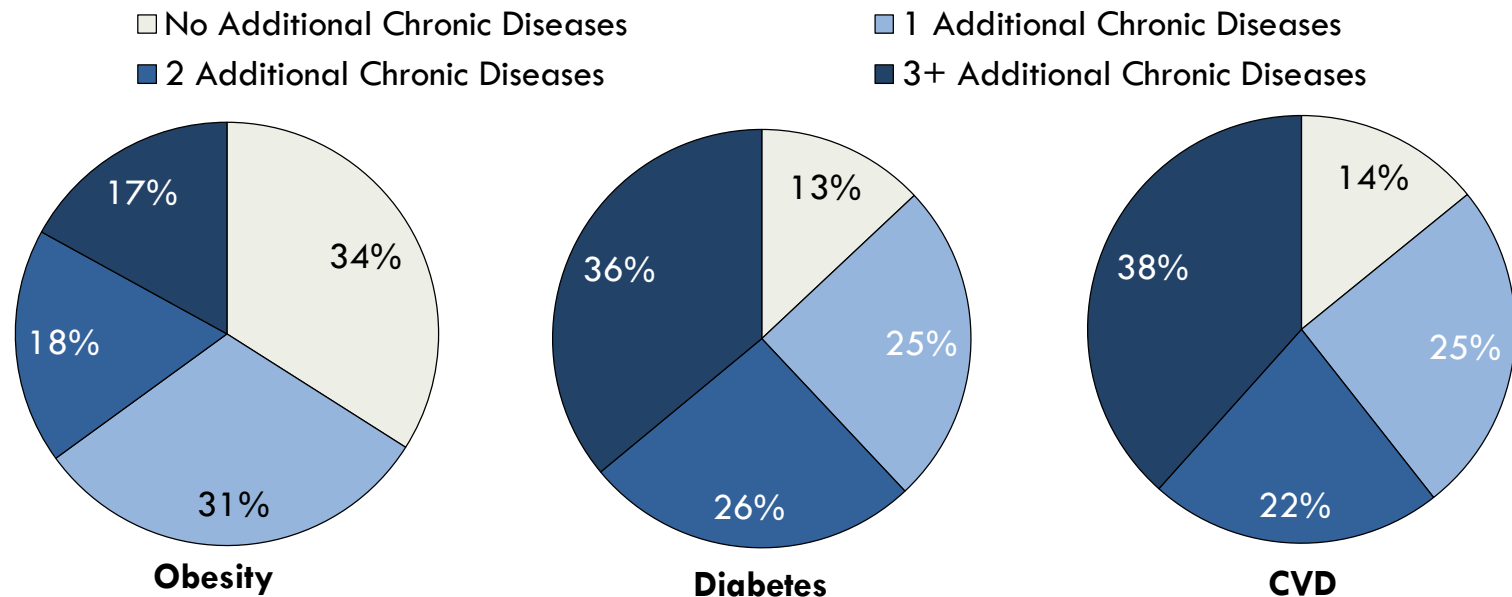
Source: Vermont Behavioral Risk Factor Surveillance System 2015.



# Proportion of Vermont Adults with Multiple Chronic Diseases among Those Having 1305 Chronic Conditions

Obesity is a gateway condition to more severe chronic disease such as diabetes or CVD. Vermont adults with obesity are more likely to experience only obesity or have one additional chronic disease than two or more additional chronic diseases. Those who have diabetes and CVD are more likely to have two or more additional chronic diseases. Each graph represents all Vermont adults who have been diagnosed with the chronic disease displayed below it.

## Proportion of Vermonters with Multiple Chronic Diseases Among Those Diagnosed with a 1305 Chronic Diseases, 2015



Source: Vermont Behavioral Risk Factor Surveillance System, 2015.



# Conclusion

# Conclusion

- Chronic disease is responsible for the majority of deaths in Vermont and leads to increased healthcare encounters as well as decreased quality of life as a result of largely preventable medical conditions.
- High levels of chronic disease and certain behaviors are related. Three behaviors (poor nutrition, tobacco use, and physical inactivity), lead to 4 chronic diseases (diabetes, cardiovascular disease, lung disease, and cancer) that result in more than 50% of deaths in Vermont.
- With greater access to healthy food options and opportunities for physical activity, the prevalence of risk factors for chronic disease in Vermont decreased. As these risk factors are reduced the impact of chronic disease can be diminished.
- Changing the environment to promote healthy behaviors in communities, workplaces, and schools through policies that make the healthy option the easiest one will help reduce the negative impact of chronic disease including the financial burden on individuals and communities.



# Data Sources

# Data Sources and Notes

**Behavioral Risk Factor Surveillance System (BRFSS):** Vermont tracks risk behaviors using this telephone survey of adults. The results are used to plan, support, and evaluate health promotion and disease prevention programs. Since 1990, Vermont, along with the 49 other states and three territories, has participated in the BRFSS with the Centers for Disease Control and Prevention (CDC). Approximately 7,000 Vermonters are randomly and anonymously selected annually. An adult (18 or older) in the household is asked a uniform set of questions. The results are weighted to represent the adult population of the state.

**Federal poverty level (FPL):** is a measure calculated from annual household income and family size. FPL is used to determine eligibility for government assistance programs.

**Socioeconomic Status (SES):** is a measure calculated from FPL and level of education. People living below 250% FPL and having a high school or less education, for example, are considered low income, often unable to meet basic needs.

**Youth Risk Behavior Survey (YRBS):** Every two years since 1993, the Vermont Department of Health's Division of Alcohol and Drug Abuse Program, and the Agency of Education's Coordinated School Health Programs have sponsored the YRBS. The YRBS measures the prevalence of behaviors that contribute to the leading causes of death, disease, and injury among Vermont youth in grades 6-12. The YRBS is part of a larger effort to help communities increase the “resiliency” of young people by reducing high risk behaviors and promoting healthy behaviors.

**School Health Profiles (SHP):** Every two years since 2002 the Vermont Agency and Education and Department of Health have worked together to collect data from secondary schools containing any grades from six through twelve. School principals and lead health educators answer questions about current health policies and health education practices in their schools. It is designed to be useful to administrators, school board members, school health coordinators, school nurses, health educators, physical educators, parents, and community members.

# Data Sources and Notes

**Vermont Vital Statistics:** The Vermont Department of Health vital statistics system tracks Vermont births and deaths. The Department of Health also receives abstracts for Vermont resident births and deaths that occur in other states which allows the Department to do statistical analyses of vital events involving Vermont residents, including those events which occurred outside of the state. Primary cause of death refers to when a condition is listed as the first mortality code. All deaths related to a condition refers to when it is listed as any of the twenty possible mortality codes.

**Vermont Uniform Hospital Discharge Data Set (VUHDDS):** Hospital and emergency department discharge data are collected from in-state hospitals and from hospitals in bordering states. Only Vermont residents were included in this analysis. A primary diagnosis of a condition refers to when that condition is listed as the first diagnosis code. Any mention of the condition refers to when the condition in question is listed as any of the twenty available diagnosis codes. Patients admitted to the hospital from the emergency department are included in the hospital discharge data set and are not included in the emergency department data set.

**Vermont Health Care Uniform Reporting and Evolution System (VHCURES):** Vermont's All-Payer Claims Database that contains most medical and pharmacy claims and eligibility data for Vermonters insured by an insurance provider (public or private) who reports to the State of Vermont. Due to various laws and regulations, not all claims are reported to the state by payers. As a result of this, and the fact that medical care that did not generate an insurance claim do not appear here, data generated from VHCURES are estimates of healthcare utilization among insured Vermonters.

# Data Sources and Notes

**United States Renal Data System (USRDS):** The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) funds the USRDS which is a national data system collecting, analyzing, and distributing information about chronic kidney disease (CKD) and end-stage renal disease (ESRD) in the United States. Data are received by USRDS through collaboration with the Centers for Medicare & Medicaid Services (CMS), United Network for Organ Sharing (UNOS), and ESRD networks. Data are made available publicly through the USRDS.

**Confidence Intervals Used For Statistical Comparisons:** A confidence interval represents the range in which a parameter estimate could fall which was calculated based on the observed data. For this analysis, a 95% confidence interval was used, meaning that one can be 95% confident that the true value of the parameter being examined falls within the specified confidence interval. Statistical significance was assessed by comparing the confidence intervals of different groups. If the confidence intervals from two groups do not overlap, the estimate was considered to be significantly different from the another.

**Age-Adjustment:** Measures are adjusted for age for all data sources if they are Healthy Vermonters 2020 measures or if Healthy People 2020 indicates a measure should be age-adjusted. Age-adjustment groupings come from those determined by Healthy People 2020. To ensure consistency, whenever a subset of an age-adjusted measure is calculated it is also age-adjusted.

# For additional information

## **Vermont Diabetes Prevention:**

<http://healthvermont.gov/wellness/diabetes>

<http://myhealthyvt.org/>

Data Resources: <http://healthvermont.gov/health-statistics-vital-records/surveillance-reporting-topic/diabetes>

## **Vermont Cardiovascular Disease Prevention:**

<http://healthvermont.gov/wellness/heart-disease>

<http://ladiesfirstproviders.vermont.gov/>

Data Resources: <http://healthvermont.gov/health-statistics-vital-records/surveillance-reporting-topic/cardiovascular-disease>

## **Vermont Physical Activity and Nutrition and Obesity Prevention:**

<http://healthvermont.gov/mymoment/>      <http://healthvermont.gov/wellness/physical-activity-nutrition>

Data Resources: <http://healthvermont.gov/health-statistics-vital-records/surveillance-reporting-topic/physical-activity-and-nutrition>

### **School Health**

<http://healthvermont.gov/wellness/physical-activity-nutrition/school-and-early-child-care>

### **Worksite Wellness**

<http://healthvermont.gov/wellness/physical-activity-nutrition/workplace>

## **3-4-50 Vermont: Drive Down Chronic Disease**

<http://healthvermont.gov/3-4-50>

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# Appendix

# Prevalence of Chronic Disease by Income and Level of Education†

Socioeconomic Factor		CVD	Diabetes	Obesity (ages 20+)^
Income	Low (<\$25K)	14%	13%	31%
	Middle (\$25K-<\$50K)	9%	10%	29%
	High (\$50K-<\$75K)	6%	6%	28%
	Highest (\$75K+)	3%	4%	20%
Level of Education	High School or Less	11%	12%	33%
	Some College	7%	8%	27%
	College+	5%	4%	16%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Chronic Disease Comorbidities for Adults by Cardiovascular Disease Status<sup>†</sup>

Chronic Disease	Had CVD	Did Not Have CVD
Arthritis*	57%	24%
Asthma	15%	11%
Cancer~*	16%	6%
Chronic Kidney Disease*	9%	2%
COPD*	23%	5%
Depression*	29%	22%
Diabetes*	28%	6%
Obesity (ages 20+)^*	41%	24%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Chronic Disease Comorbidities by Adult Obesity Status†

Chronic Disease	Was Obese	Was Not Obese
Arthritis*	37%	24%
Asthma*	15%	10%
Cancer~	7%	7%
Cardiovascular Disease (CVD)*	12%	7%
Chronic Kidney Disease*	4%	2%
COPD*	9%	6%
Depression*	31%	21%
Diabetes*	20%	4%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Prevalence of Risk Factors by Income and Level of Education†

Socioeconomic Factor		Hypertension^	Prediabetes	Overweight (ages 20+)^
Income	Low (<\$25K)	32%	8%	31%
	Middle (\$25K-<\$50K)	27%	6%	34%
	High (\$50K-<\$75K)	26%	7%	37%
	Highest (\$75K+)	23%	4%	38%
Level of Education	High School or Less	30%	7%	34%
	Some College	25%	6%	36%
	College+	21%	4%	34%

Source: Vermont Behavioral Risk Factor Surveillance System 2015 (Hypertension and overweight) and 2014 (prediabetes).

# Prevalence of Protective Factors by Income and Level of Education†

Socioeconomic Factor		150+ Mins Weekly Aerobic Physical Activity^	2+ Fruits a Day^	3+ Vegetables a Day^	<1 Soda/Sugar- Sweetened Beverage a Day
Income	Low (<\$25K)	48%	26%	16%	73%
	Middle (\$25K-<\$50K)	56%	30%	17%	82%
	High (\$50K-<\$75K)	65%	32%	21%	88%
	Highest (\$75K+)	65%	36%	26%	90%
Level of Education	High School or Less	49%	25%	12%	76%
	Some College	58%	33%	21%	83%
	College+	70%	38%	29%	92%

Source: Vermont Behavioral Risk Factor Surveillance System 2015 (physical activity and fruit/vegetable consumption) and 2013 (soda/sugar-sweetened beverages).

# Chronic Disease Comorbidities for Adults by Hypertension Status†

Chronic Disease	Had Hypertension	Did Not Have Hypertension
Arthritis*	45%	19%
Asthma	13%	10%
Cancer~*	11%	5%
Cardiovascular Disease*	18%	4%
Chronic Kidney Disease*	5%	2%
COPD*	11%	4%
Depression*	26%	21%
Diabetes*	20%	4%
Obesity (ages 20+)^*	44%	19%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Chronic Disease Comorbidities for Adults by Overweight Status†

Chronic Disease	Were Overweight	Were Not Overweight or Obese
Arthritis*	28%	20%
Asthma	9%	10%
Cancer~	7%	7%
Cardiovascular Disease*	9%	5%
Chronic Kidney Disease	2%	2%
COPD	5%	6%
Depression	20%	21%
Diabetes*	7%	2%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.



# Chronic Disease Comorbidities for Adults by Amount of Weekly Physical Activity†

Chronic Disease	Met CDC Weekly Aerobic Physical Activity Guidelines	Did Not Meet CDC Weekly Aerobic Physical Activity
Arthritis*	25%	32%
Asthma	10%	12%
Cancer~	7%	8%
Cardiovascular Disease*	7%	10%
Chronic Kidney Disease	2%	3%
COPD*	5%	8%
Depression*	20%	28%
Diabetes*	6%	11%
Obesity (ages 20+)^*	20%	33%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Chronic Disease Comorbidities for Adults by Amount of Fruit Consumed per Day<sup>†</sup>

Chronic Disease	2+ Fruits a Day	<2 Fruits a Day
Arthritis	28%	27%
Asthma	10%	11%
Cancer <sup>~*</sup>	9%	6%
Cardiovascular Disease	8%	8%
Chronic Kidney Disease	3%	3%
COPD	5%	7%
Depression <sup>*</sup>	19%	25%
Diabetes	8%	9%
Obesity (ages 20+) <sup>^</sup>	23%	26%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Chronic Disease Comorbidities for Adults by Amount of Vegetables Consumed per Day<sup>†</sup>

Chronic Disease	3+ Vegetables a Day	<3 Vegetables a Day
Arthritis	27%	28%
Asthma	10%	11%
Cancer~	8%	7%
Cardiovascular Disease	7%	8%
Chronic Kidney Disease	2%	3%
COPD	5%	7%
Depression*	19%	24%
Diabetes*	6%	9%
Obesity (ages 20+)^*	19%	27%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

# Chronic Disease Comorbidities for Adults by Amount of Soda/Sugar Sweetened Beverage Consumed per Day<sup>†</sup>

Chronic Disease	<1 Soda/Sugar-Sweetened Beverage a Day	1+ Sodas/Sugar-Sweetened Beverages a Day
Arthritis	29%	26%
Asthma	11%	15%
Cancer <sup>~</sup>	8%	8%
Cardiovascular Disease	8%	11%
Chronic Kidney Disease	2%	3%
COPD	5%	8%
Depression <sup>*</sup>	22%	28%
Diabetes	8%	6%
Obesity (ages 20+) <sup>^*</sup>	24%	32%

Source: Vermont Behavioral Risk Factor Surveillance System 2013.